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**STATE OF CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**

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**NOTICE TO CONTRACTORS**  
**AND**  
**SPECIAL PROVISIONS**

**FOR CONSTRUCTION ON STATE HIGHWAY IN**

**SOLANO COUNTY IN AND NEAR VALLEJO FROM 0.1 km EAST OF CARQUINEZ BRIDGE TOLL PLAZA  
TO 0.7 km WEST OF REDWOOD STREET OVERCROSSING**

**DISTRICT 04, ROUTE 80**

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**For Use in Connection with Standard Specifications Dated JULY 1999, Standard Plans Dated JULY 1999, and Labor  
Surcharge and Equipment Rental Rates.**

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**CONTRACT NO. 04-0T0504**

**04-Sol-80-0.9/6.4**

**Federal Aid Project**  
**ACIM-080-2(081)32E**

**Bids Open: June 20, 2001**  
**Dated: May 21, 2001**

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# IMPORTANT SPECIAL NOTICES

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The specifications for this project require the production of asphalt-rubber binder. The Air Quality Management District must approve the production and placement of asphalt-rubber binder and rubberized asphalt concrete, in addition to the Operating Permits required to produce asphalt concrete. Air Quality Management Districts have stopped production of these products due to failure to obtain necessary approvals.

The bidder's attention is directed to Section 5, containing specifications for "Disputes Review Board," of the Special Provisions, regarding establishing a Disputes Review Board (DRB) for the project.

The Special Provisions for Federal-aid projects (with and without DBE goals) have been revised to incorporate changes made by new regulations governing the DBE Program (49 CFR Part 26).

Sections 2 and 5 incorporate the changes. Bidders should read these sections to become familiar with them. Attention is directed to the following significant changes:

Section 2, "Disadvantaged Business Enterprise (DBE)" revises the counting of participation by DBE primes, and the counting of trucking performed by DBE firms. The section also revises the information that must be submitted to the Department in order to receive credit for trucking.

Section 2, "Submission of DBE Information" revises the information required to be submitted to the Department to receive credit toward the DBE goal. It also revises the criteria to demonstrate good faith efforts.

Section 5, "Subcontractor and DBE Records" revises the information required to be reported at the end of the project, and information related to trucking that must be submitted throughout the project.

Section 5, "DBE Certification Status" adds new reporting requirements related to DBE certification.

Section 5, "Subcontracting" describes the efforts that must be made in the event a DBE subcontractor is terminated or fails to complete its work for any reason.

Section 5, "Prompt Progress Payment to Subcontractors" requires prompt payment to all subcontractors.

Section 5, "Prompt Payment of Withheld Funds to Subcontractors" requires the prompt payment of retention to all subcontractors.

- **Payment Bonds**

Attention is directed to Section 5 of the Special Provisions, regarding contract bonds. The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.



# TABLE OF CONTENTS

|  |    |
|--|----|
| NOTICE TO CONTRACTORS.....   | 1  |
| COPY OF ENGINEER'S ESTIMATE .....  | 3  |
| SPECIAL PROVISIONS .....   | 10 |
| SECTION 1. SPECIFICATIONS AND PLANS.....                                       | 10 |
| SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS.....                           | 10 |
| 2-1.01 GENERAL.....  | 10 |
| 2-1.015 FEDERAL LOBBYING RESTRICTIONS.....                                     | 10 |
| 2-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE).....                            | 11 |
| 2-1.02A DBE GOAL FOR THIS PROJECT.....   | 13 |
| 2-1.02B SUBMISSION OF DBE INFORMATION .....                                    | 13 |
| SECTION 3. AWARD AND EXECUTION OF CONTRACT.....                                | 14 |
| SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES .....  | 14 |
| SECTION 5. GENERAL .....   | 15 |
| SECTION 5-1. MISCELLANEOUS .....   | 15 |
| 5-1.01 PLANS AND WORKING DRAWINGS .....  | 15 |
| 5-1.011 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK ..... | 15 |
| 5-1.012 DIFFERING SITE CONDITIONS.....   | 15 |
| 5-1.015 LABORATORY .....   | 15 |
| 5-1.017 CONTRACT BONDS .....   | 15 |
| 5-1.018 EXCAVATION SAFETY PLANS .....  | 16 |
| 5-1.019 COST REDUCTION INCENTIVE.....  | 16 |
| 5-1.02 LABOR NONDISCRIMINATION.....  | 16 |
| 5-1.03 INTEREST ON PAYMENTS .....  | 16 |
| 5-1.031 FINAL PAYMENT AND CLAIMS.....  | 17 |
| 5-1.04 PUBLIC SAFETY .....   | 17 |
| 5-1.05 SURFACE MINING AND RECLAMATION ACT.....                                 | 18 |
| 5-1.06 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES.....                       | 18 |
| 5-1.07 YEAR 2000 COMPLIANCE.....   | 19 |
| 5-1.075 BUY AMERICA REQUIREMENTS.....  | 19 |
| 5-1.08 SUBCONTRACTOR AND DBE RECORDS .....                                     | 19 |
| 5-1.083 DBE CERTIFICATION STATUS .....   | 20 |
| 5-1.086 PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS .....                  | 20 |
| 5-1.09 SUBCONTRACTING.....   | 20 |
| 5-1.10 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS .....                         | 21 |
| 5-1.102 PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS .....               | 21 |
| 5-1.11 PARTNERING .....  | 21 |
| 5-1.114 VALUE ANALYSIS .....   | 21 |
| 5-1.12 DISPUTE REVIEW BOARD .....  | 22 |
| DISPUTES INVOLVING SUBCONTRACTOR CLAIMS .....                                  | 25 |
| 5-1.13 AERIALLY DEPOSITED LEAD.....  | 31 |
| 5-1.14 COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS.....              | 32 |
| 5-1.15 AREAS FOR CONTRACTOR'S USE.....   | 33 |
| 5-1.16 PAYMENTS.....   | 33 |
| 5-1.17 SOUND CONTROL REQUIREMENTS.....   | 33 |
| 5-1.18 FORCE ACCOUNT PAYMENT.....  | 34 |
| SECTION 6. (BLANK).....  | 34 |
| SECTION 7. (BLANK).....  | 34 |
| SECTION 8. MATERIALS .....   | 34 |
| SECTION 8-1. MISCELLANEOUS .....   | 34 |
| 8-1.01 SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS .....                 | 34 |
| 8-1.02 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS .....         | 40 |
| 8-1.03 STATE-FURNISHED MATERIALS .....   | 45 |
| 8-1.04 ENGINEERING FABRICS.....  | 45 |

|  |    |
|--|----|
| SECTION 8-2. CONCRETE.....   | 45 |
| 8-2.01 PORTLAND CEMENT CONCRETE.....   | 45 |
| SECTION 8-3. WELDING.....  | 46 |
| 8-3.01 WELDING.....  | 46 |
| GENERAL.....   | 46 |
| WELDING QUALITY CONTROL .....  | 47 |
| PAYMENT .....  | 50 |
| SECTION 9. (BLANK).....  | 50 |
| SECTION 10. CONSTRUCTION DETAILS.....  | 50 |
| SECTION 10-1. GENERAL .....  | 50 |
| 10-1.01 CONSTRUCTION PROJECT INFORMATION SIGNS .....                             | 50 |
| 10-1.02 ORDER OF WORK.....   | 51 |
| 10-1.03 WATER POLLUTION CONTROL (STORM WATER POLLUTION PREVENTION PLAN) .....    | 52 |
| STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS ..... | 53 |
| COST BREAK-DOWN .....  | 54 |
| SWPPP IMPLEMENTATION .....   | 57 |
| MAINTENANCE .....  | 58 |
| PAYMENT .....  | 58 |
| 10-1.04 TEMPORARY FENCE.....   | 60 |
| 10-1.05 TEMPORARY SILT FENCE.....  | 60 |
| MATERIALS.....   | 60 |
| INSTALLATION .....   | 60 |
| MEASUREMENT AND PAYMENT .....  | 61 |
| 10-1.06 TEMPORARY ENTRANCE/EXIT .....  | 61 |
| INSTALLATION .....   | 62 |
| MAINTENANCE .....  | 62 |
| PAYMENT .....  | 62 |
| 10-1.07 PRESERVATION OF PROPERTY .....   | 62 |
| 10-1.08 TEMPORARY ROCK BAG CHECK DAM .....                                       | 63 |
| MATERIALS.....   | 63 |
| INSTALLATION .....   | 63 |
| INSTALLATION .....   | 63 |
| MEASUREMENT AND PAYMENT .....  | 63 |
| 10-1.09 TEMPORARY CONCRETE WASHOUT FACILITY .....                                | 63 |
| MATERIALS.....   | 64 |
| TEMPORARY CONCRETE WASHOUT FACILITY (TYPE ABOVE GRADE) .....                     | 64 |
| TEMPORARY CONCRETE WASHOUT FACILITY (TYPE BELOW GRADE).....                      | 64 |
| MAINTENANCE AND REMOVAL.....   | 64 |
| PAYMENT .....  | 65 |
| 10-1.10 TEMPORARY COVER .....  | 65 |
| MATERIALS.....   | 65 |
| INSTALLATION .....   | 65 |
| MEASUREMENT AND PAYMENT .....  | 65 |
| 10-1.11 TEMPORARY DRAINAGE INLET PROTECTION .....                                | 65 |
| MATERIALS.....   | 66 |
| INSTALLATION AND MAINTENANCE .....   | 66 |
| MEASUREMENT AND PAYMENT .....  | 66 |
| 10-1.12 COOPERATION .....  | 67 |
| 10-1.13 PROGRESS SCHEDULE (CRITICAL PATH METHOD).....                            | 67 |
| DEFINITIONS.....   | 67 |
| GENERAL REQUIREMENTS .....   | 68 |
| COMPUTER SOFTWARE .....  | 69 |
| NETWORK DIAGRAMS, REPORTS AND DATA.....  | 69 |
| PRE-CONSTRUCTION SCHEDULING CONFERENCE .....                                     | 70 |
| BASELINE SCHEDULE .....  | 71 |
| UPDATE SCHEDULE.....   | 71 |
| TIME IMPACT ANALYSIS.....  | 71 |

|   |     |
|---|-----|
| FINAL UPDATE SCHEDULE .....   | 72  |
| RETENTION .....   | 72  |
| PAYMENT .....   | 72  |
| 10-1.14 OVERHEAD .....  | 73  |
| 10-1.15 OBSTRUCTIONS .....  | 74  |
| 10-1.16 MOBILIZATION .....  | 75  |
| 10-1.17 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES .....               | 75  |
| 10-1.18 CONSTRUCTION AREA SIGNS .....                                 | 76  |
| 10-1.19 MAINTAINING TRAFFIC.....                                      | 76  |
| 10-1.20 CLOSURE REQUIREMENTS AND CONDITIONS .....                     | 97  |
| CLOSURE SCHEDULE .....  | 97  |
| CONTINGENCY PLAN .....  | 97  |
| LATE REOPENING OF CLOSURES .....                                      | 97  |
| COMPENSATION .....  | 97  |
| 10-1.21 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE.....                  | 98  |
| STATIONARY LANE CLOSURE .....   | 98  |
| MOVING LANE CLOSURE .....   | 98  |
| PAYMENT .....   | 99  |
| 10-1.22 TEMPORARY PAVEMENT DELINEATION .....                          | 99  |
| GENERAL .....   | 99  |
| TEMPORARY LANELINE AND CENTERLINE DELINEATION .....                   | 99  |
| TEMPORARY EDGELINE DELINEATION .....                                  | 100 |
| TEMPORARY TRAFFIC STRIPE (PAINT).....                                 | 101 |
| TEMPORARY PAVEMENT MARKING (PAINT).....                               | 101 |
| TEMPORARY PAVEMENT MARKERS.....                                       | 101 |
| 10-1.23 PORTABLE CHANGEABLE MESSAGE SIGN.....                         | 102 |
| 10-1.24 TEMPORARY RAILING .....                                       | 102 |
| 10-1.25 CHANNELIZER .....   | 102 |
| 10-1.26 TEMPORARY CRASH CUSHION MODULE.....                           | 102 |
| 10-1.27 EXISTING HIGHWAY FACILITIES .....                             | 104 |
| REMOVE TREE.....  | 104 |
| ABANDON CULVERT .....   | 104 |
| SALVAGE CRASH CUSHION MODULE.....                                     | 104 |
| REMOVE METAL BEAM GUARD RAILING.....                                  | 105 |
| REMOVE SINGLE METAL BEAM BARRIER.....                                 | 105 |
| REMOVE DOUBLE METAL BEAM BARRIER.....                                 | 105 |
| REMOVE SIGN STRUCTURE .....   | 105 |
| REMOVE PAVEMENT MARKER.....   | 105 |
| REMOVE YELLOW TRAFFIC STRIPE AND PAVEMENT MARKING .....               | 105 |
| REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING .....                      | 106 |
| REMOVE DRAINAGE FACILITY.....   | 106 |
| REMOVE ASPHALT CONCRETE DIKE AND ASPHALT CONCRETE OVERSIDE DRAIN..... | 106 |
| REMOVE ROADSIDE SIGN .....  | 106 |
| REMOVE CHAIN LINK FENCE.....  | 106 |
| RECONSTRUCT METAL BEAM GUARD RAILING.....                             | 106 |
| RELOCATE SIGN STRUCTURE .....   | 107 |
| RELOCATE ROADSIDE SIGN .....  | 107 |
| MODIFY INLET TO MANHOLE.....  | 107 |
| MODIFY INLET .....  | 107 |
| ADJUST INLET .....  | 107 |
| ADJUST MANHOLE TO GRADE.....  | 108 |
| COLD PLANE ASPHALT CONCRETE PAVEMENT .....                            | 108 |
| CAP INLET .....   | 108 |
| CAP RISER .....   | 109 |
| REMOVE CONCRETE.....  | 109 |
| 10-1.28 CLEARING AND GRUBBING.....                                    | 109 |
| 10-1.29 EARTHWORK.....  | 110 |
| 10-1.30 CONTROLLED LOW STRENGTH MATERIAL .....                        | 110 |

|         |   |     |
|---------|---|-----|
| 10-1.31 | MATERIAL CONTAINING AERIALY DEPOSITED LEAD .....        | 111 |
|         | LEAD COMPLIANCE PLAN .....                              | 111 |
|         | EXCAVATION AND TRANSPORTATION PLAN .....                | 111 |
|         | DUST CONTROL .....                                      | 112 |
|         | MATERIAL TRANSPORTATION .....                           | 112 |
|         | MEASUREMENT AND PAYMENT .....                           | 112 |
| 10-1.32 | SHOULDER BACKING .....                                  | 113 |
| 10-1.33 | SUBGRADE ENHANCEMENT FABRIC .....                       | 113 |
| 10-1.34 | EROSION CONTROL (BLANKET) .....                         | 115 |
|         | MATERIALS .....   | 115 |
|         | APPLICATION .....                                       | 115 |
|         | MEASUREMENT AND PAYMENT .....                           | 116 |
| 10-1.35 | EROSION CONTROL (TYPE D) .....                          | 116 |
|         | MATERIALS .....   | 116 |
|         | APPLICATION .....                                       | 118 |
|         | MEASUREMENT AND PAYMENT .....                           | 118 |
| 10-1.36 | EXTEND IRRIGATION CROSSOVERS .....                      | 118 |
| 10-1.37 | SOIL TREATMENT .....                                    | 119 |
| 10-1.38 | CONCRETE PAVERS .....                                   | 119 |
|         | EARTHWORK .....   | 119 |
|         | SOIL TREATMENT .....                                    | 119 |
|         | AGGREGATE BASE .....                                    | 120 |
|         | SAND .....  | 120 |
|         | CONCRETE BAND .....                                     | 120 |
|         | ASPHALT CONCRETE .....                                  | 120 |
|         | CONCRETE PAVERS .....                                   | 120 |
| 10-1.39 | MAINTENANCE VEHICLE PULLOUT .....                       | 121 |
|         | EARTHWORK .....   | 121 |
|         | SOIL TREATMENT .....                                    | 121 |
|         | AGGREGATE BASE .....                                    | 121 |
|         | ASPHALT CONCRETE .....                                  | 121 |
|         | MEASUREMENT .....                                       | 121 |
|         | PAYMENT .....   | 121 |
| 10-1.40 | FINISHING ROADWAY .....                                 | 121 |
| 10-1.41 | AGGREGATE SUBBASE .....                                 | 121 |
| 10-1.42 | ASPHALT CONCRETE .....                                  | 122 |
| 10-1.43 | REPLACE ASPHALT CONCRETE SURFACING .....                | 123 |
| 10-1.44 | RUBBERIZED ASPHALT CONCRETE (TYPE G) .....              | 123 |
|         | GENERAL .....   | 123 |
|         | PAVING ASPHALT .....                                    | 125 |
|         | ASPHALT MODIFIER .....                                  | 125 |
|         | CRUMB RUBBER MODIFIER (CRM) .....                       | 125 |
|         | ASPHALT-RUBBER BINDER .....                             | 127 |
|         | EQUIPMENT FOR PRODUCTION OF ASPHALT-RUBBER BINDER ..... | 128 |
|         | AGGREGATE .....   | 129 |
|         | PROPORTIONING, SPREADING AND COMPACTING .....           | 129 |
|         | MEASUREMENT AND PAYMENT .....                           | 130 |
| 10-1.45 | PILING .....  | 130 |
|         | GENERAL .....   | 130 |
|         | CAST-IN-DRILLED-HOLE CONCRETE PILES .....               | 131 |
| 10-1.46 | CONCRETE STRUCTURES .....                               | 135 |
| 10-1.47 | REINFORCEMENT .....                                     | 135 |
| 10-1.48 | SIGN STRUCTURES .....                                   | 136 |
| 10-1.49 | ROADSIDE SIGNS .....                                    | 138 |
| 10-1.50 | ALTERNATIVE PIPE .....                                  | 138 |
| 10-1.51 | PLASTIC PIPE .....                                      | 138 |
| 10-1.52 | REINFORCED CONCRETE PIPE .....                          | 138 |
| 10-1.53 | CORRUGATED METAL PIPE .....                             | 139 |



|   |     |
|---|-----|
| 10-1.54 MISCELLANEOUS FACILITIES .....                                | 139 |
| 10-1.55 MISCELLANEOUS CONCRETE CONSTRUCTION .....                     | 139 |
| 10-1.56 MISCELLANEOUS IRON AND STEEL.....                             | 139 |
| 10-1.57 CHAIN LINK FENCE.....   | 140 |
| 10-1.58 MARKERS AND DELINEATORS .....                                 | 140 |
| 10-1.59 METAL BEAM GUARD RAILING .....                                | 140 |
| TERMINAL SYSTEM (TYPE SRT) .....                                      | 140 |
| 10-1.60 CONCRETE BARRIER.....   | 141 |
| 10-1.61 CONCRETE BARRIER (TYPE K) .....                               | 141 |
| 10-1.62 CRASH CUSHION (REACT).....                                    | 141 |
| 10-1.63 CRASH CUSHION, SAND FILLED.....                               | 142 |
| 10-1.64 THERMOPLASTIC TRAFFIC STRIPE AND PAVEMENT MARKING .....       | 143 |
| 10-1.65 PAVEMENT MARKERS .....  | 143 |
| SECTION 10-2. HIGHWAY PLANTING AND IRRIGATION SYSTEMS .....           | 143 |
| 10-2.01 GENERAL.....  | 143 |
| COST BREAK-DOWN .....   | 143 |
| 10-2.02 EXISTING HIGHWAY PLANTING .....                               | 146 |
| MAINTAIN EXISTING PLANTS.....   | 146 |
| REMOVE EXISTING PLANTS FOR TRENCHING .....                            | 146 |
| PRUNE EXISTING PLANTS.....  | 146 |
| 10-2.03 EXISTING HIGHWAY IRRIGATION FACILITIES.....                   | 146 |
| CHECK AND TEST EXISTING IRRIGATION FACILITIES.....                    | 146 |
| MAINTAIN EXISTING IRRIGATION FACILITIES .....                         | 147 |
| REMOVE EXISTING IRRIGATION FACILITIES.....                            | 147 |
| RELOCATE EXISTING IRRIGATION FACILITIES.....                          | 147 |
| 10-2.04 (BLANK).....  | 148 |
| 10-2.05 IRRIGATION SYSTEMS .....                                      | 148 |
| ELECTRIC AUTOMATIC IRRIGATION COMPONENTS .....                        | 148 |
| ARMOR-CLAD CONDUCTORS.....  | 148 |
| IRRIGATION SYSTEMS FUNCTIONAL TEST .....                              | 149 |
| PIPE .....  | 149 |
| FINAL IRRIGATION SYSTEM CHECK .....                                   | 149 |
| SECTION 10-3. LIGHTING AND ELECTRICAL SYSTEMS.....                    | 149 |
| 10-3.01 DESCRIPTION .....   | 149 |
| 10-3.02 COST BREAK-DOWN .....   | 150 |
| 10-3.03 CONDUIT .....   | 150 |
| 10-3.04 PULL BOXES .....  | 150 |
| 10-3.05 CONDUCTORS AND WIRING.....                                    | 150 |
| 10-3.06 SERVICE.....  | 150 |
| 10-3.07 SIGN DISCONNECTS.....   | 151 |
| 10-3.08 NUMBERING ELECTRICAL EQUIPMENT.....                           | 151 |
| 10-3.09 DETECTORS .....   | 151 |
| 10-3.10 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT..... | 151 |
| 10-3.11 PAYMENT .....   | 151 |
| SECTION 11. MODIFIED STANDARD SPECIFICATION SECTIONS .....            | 151 |
| SECTION 11-1. (BLANK) .....   | 151 |
| SECTION 11-2. PORTLAND CEMENT CONCRETE.....                           | 151 |
| 11-2.01 GENERAL.....  | 151 |
| SECTION 90: PORTLAND CEMENT CONCRETE.....                             | 151 |
| 90-1 GENERAL.....   | 151 |
| 90-1.01 DESCRIPTION .....   | 151 |
| 90-2 MATERIALS.....   | 153 |
| 90-2.01 CEMENT.....   | 153 |
| 90-2.02 AGGREGATES.....   | 153 |
| 90-2.02A Coarse Aggregate.....  | 154 |
| 90-2.02B Fine Aggregate.....  | 155 |
| 90-2.03 WATER .....   | 155 |
| 90-2.04 ADMIXTURE MATERIALS.....                                      | 156 |

|           |  |     |
|-----------|--|-----|
| 90-3      | AGGREGATE GRADINGS.....  | 156 |
| 90-3.01   | GENERAL.....   | 156 |
| 90-3.02   | COARSE AGGREGATE GRADING.....                                      | 157 |
| 90-3.03   | FINE AGGREGATE GRADING.....  | 157 |
| 90-3.04   | COMBINED AGGREGATE GRADINGS .....                                  | 157 |
| 90-4      | ADMIXTURES .....   | 158 |
| 90-4.01   | GENERAL.....   | 158 |
| 90-4.02   | MATERIALS.....   | 158 |
| 90-4.03   | ADMIXTURE APPROVAL .....   | 158 |
| 90-4.04   | REQUIRED USE OF CHEMICAL ADMIXTURES AND CALCIUM CHLORIDE .....     | 159 |
| 90-4.05   | OPTIONAL USE OF CHEMICAL ADMIXTURES.....                           | 159 |
| 90-4.06   | REQUIRED USE OF AIR-ENTRAINING ADMIXTURES .....                    | 159 |
| 90-4.07   | OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES.....                     | 159 |
| 90-4.08   | REQUIRED USE OF MINERAL ADMIXTURES .....                           | 159 |
| 90-4.09   | BLANK.....   | 160 |
| 90-4.10   | PROPORTIONING AND DISPENSING LIQUID ADMIXTURES .....               | 160 |
| 90-4.11   | STORAGE, PROPORTIONING, AND DISPENSING OF MINERAL ADMIXTURES ..... | 160 |
| 90-5      | PROPORTIONING .....  | 161 |
| 90-5.01   | STORAGE OF AGGREGATES .....  | 161 |
| 90-5.02   | PROPORTIONING DEVICES .....  | 161 |
| 90-5.03   | PROPORTIONING .....  | 162 |
| 90-5.03A  | Proportioning for Pavement.....                                    | 163 |
| 90-6      | MIXING AND TRANSPORTING.....                                       | 163 |
| 90-6.01   | GENERAL.....   | 163 |
| 90-6.02   | MACHINE MIXING .....   | 164 |
| 90-6.03   | TRANSPORTING MIXED CONCRETE.....                                   | 164 |
| 90-6.04   | TIME OR AMOUNT OF MIXING.....                                      | 165 |
| 90-6.05   | HAND-MIXING.....   | 165 |
| 90-6.06   | AMOUNT OF WATER AND PENETRATION .....                              | 165 |
| 90-7      | CURING CONCRETE .....  | 166 |
| 90-7.01   | METHODS OF CURING.....   | 166 |
| 90-7.01A  | Water Method .....   | 166 |
| 90-7.01B  | Curing Compound Method .....                                       | 166 |
| 90-7.01C  | Waterproof Membrane Method .....                                   | 168 |
| 90-7.01D  | Forms-In-Place Method .....  | 168 |
| 90-7.02   | CURING PAVEMENT .....  | 168 |
| 90-7.03   | CURING STRUCTURES.....   | 169 |
| 90-7.04   | CURING PRECAST CONCRETE MEMBERS.....                               | 169 |
| 90-7.05   | CURING PRECAST PRESTRESSED CONCRETE PILES .....                    | 169 |
| 90-7.06   | CURING SLOPE PROTECTION .....                                      | 170 |
| 90-7.07   | CURING MISCELLANEOUS CONCRETE WORK .....                           | 170 |
| 90-8      | PROTECTING CONCRETE.....   | 170 |
| 90-8.01   | GENERAL.....   | 170 |
| 90-8.02   | PROTECTING CONCRETE STRUCTURES.....                                | 170 |
| 90-8.03   | PROTECTING CONCRETE PAVEMENT.....                                  | 170 |
| 90-9      | COMPRESSIVE STRENGTH .....   | 171 |
| 90-9.01   | GENERAL.....   | 171 |
| 90-10     | MINOR CONCRETE .....   | 173 |
| 90-10.01  | GENERAL.....   | 173 |
| 90-10.02  | MATERIALS.....   | 173 |
| 90-10.02A | Cementitious Material .....  | 173 |
| 90-10.02B | Aggregate .....  | 173 |
| 90-10.02C | Water.....   | 173 |
| 90-10.02D | Admixtures .....   | 173 |
| 90-10.03  | PRODUCTION.....  | 173 |
| 90-10.04  | CURING MINOR CONCRETE.....   | 174 |
| 90-10.05  | PROTECTING MINOR CONCRETE .....                                    | 174 |
| 90-10.06  | MEASUREMENT AND PAYMENT .....                                      | 174 |

|  |     |
|--|-----|
| 90-11 MEASUREMENT AND PAYMENT .....  | 174 |
| 90-11.01 MEASUREMENT .....   | 174 |
| 90-11.02 PAYMENT .....   | 174 |
| SECTION 12. (BLANK).....   | 174 |
| SECTION 13. (BLANK).....   | 174 |
| SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS ..... | 175 |
| FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS .....                        | 194 |

## STANDARD PLANS LIST

The Standard Plan sheets applicable to this contract include, but are not limited to those indicated below. The Revised Standard Plans (RSP) and New Standard Plans (NSP) which apply to this contract are included as individual sheets of the project plans.

|           |  |
|-----------|--|
| A10A      | Abbreviations  |
| A10B      | Symbols  |
| A20A      | Pavement Markers and Traffic Lines, Typical Details  |
| A20B      | Pavement Markers and Traffic Lines, Typical Details  |
| A20C      | Pavement Markers and Traffic Lines, Typical Details  |
| A20D      | Pavement Markers and Traffic Lines, Typical Details  |
| A24A      | Pavement Markings - Arrows   |
| A24B      | Pavement Markings - Arrows   |
| A24D      | Pavement Markings - Words  |
| A24E      | Pavement Markings - Words and Crosswalks   |
| A62A      | Excavation and Backfill - Miscellaneous Details  |
| A62B      | Limits of Payment for Excavation and Backfill - Bridge Surcharge and Wall                  |
| A62D      | Excavation and Backfill - Concrete Pipe Culverts   |
| RSP A62DA | Excavation and Backfill - Concrete Pipe Culverts   |
| A62F      | Excavation and Backfill - Metal and Plastic Culverts                                       |
| A73A      | Object Markers   |
| A73B      | Markers  |
| RSP A73C  | Delineators, Channelizers and Barricades   |
| A76A      | Concrete Barrier Type 60   |
| A76B      | Concrete Barrier Type 60   |
| A76C      | Concrete Barrier Type 60E  |
| A77A      | Metal Beam Guard Railing – Typical Wood Post With Wood Block                               |
| A77AA     | Metal Beam Guard Railing – Typical Steel Post With Wood Block                              |
| A77B      | Metal Beam Guard Railing - Standard Hardware   |
| A77C      | Metal Beam Guard Railing – Wood Post and Wood Block Details                                |
| A77CA     | Metal Beam Guard Railing – Steel Post and Wood Block Details                               |
| A77D      | Metal Beam Guard Railing – Typical Layouts   |
| A77E      | Metal Beam Guard Railing – Typical Layouts   |
| A77F      | Metal Beam Guard Railing – Typical Embankment Widening for End Treatments                  |
| A77FA     | Metal Beam Guard Railing – Typical Line Post Installation                                  |
| RSP A77G  | Metal Beam Guard Railing – End Treatment, Terminal Anchor Assembly (Type SFT)              |
| A77H      | Metal Beam Guard Railing - Anchor Cable and Anchor Plate Details                           |
| A77I      | Metal Beam Guard Railing – End Treatment, Terminal Anchor Assembly (Type CA)               |
| A77IA     | Metal Beam Guard Railing – End Treatment, Buried Post Anchor                               |
| A77J      | Metal Beam Guard Railing Connections to Bridge Railings, Retaining Walls and Abutments     |
| RSP A77L  | Metal Beam Guard Railing and Single Faced Barrier Railing Terminal System - End Treatments |

|            |   |
|------------|---|
| A81A       | Crash Cushion, Sand Filled (Unidirectional)   |
| A81C       | Crash Cushion, Sand Filled (Bidirectional)  |
| A82C       | Crash Cushion (Type REACT 9CBB)   |
| A82CA      | Crash Cushion (Type REACT 9CBB) – Backup Block Details  |
| A82CB      | Crash Cushion (Type REACT 9CBB) – Concrete Barrier Transition Details                                   |
| A85        | Chain Link Fence  |
| A87        | Curbs, Dikes and Driveways  |
| A88A       | Curb Ramp Details   |
| RSP D72    | Drainage Inlets   |
| D73        | Drainage Inlets   |
| D74A       | Drainage Inlets   |
| D74B       | Drainage Inlets   |
| D74C       | Drainage Inlet Details  |
| D75A       | Pipe Inlets   |
| D77A       | Grate Details   |
| D78        | Gutter Depressions  |
| D86B       | Pipe Culvert Headwalls, Endwalls and Warped Wingwalls   |
| D87D       | Overside Drains   |
| D88        | Construction Loads On Culverts  |
| D94A       | Metal and Plastic Flared End Sections   |
| D94B       | Concrete Flared End Sections  |
| D97A       | Corrugated Metal Pipe Coupling Details No. 1 - Annular Coupling Band Bar and Strap and Angle Connectors |
| D97B       | Corrugated Metal Pipe Coupling Details No. 2 - Hat Band Coupler and Flange Details                      |
| D97C       | Corrugated Metal Pipe Coupling Details No. 3 - Helical and Universal Couplers                           |
| D97D       | Corrugated Metal Pipe Coupling Details No. 4 - Hugger Coupling Bands                                    |
| D97E       | Corrugated Metal Pipe Coupling Details No. 5 - Standard Joint   |
| D97F       | Corrugated Metal Pipe Coupling Details No. 6 - Positive Joint   |
| D97G       | Corrugated Metal Pipe Coupling Details No. 7 - Positive Joints and Downdrains                           |
| D97H       | Reinforced Concrete Pipe or Non-Reinforced Concrete Pipe - Standard and Positive Joints                 |
| H1         | Planting and Irrigation - Abbreviations   |
| H2         | Planting and Irrigation - Symbols   |
| H5         | Planting and Irrigation Details   |
| H7         | Planting and Irrigation Details   |
| H8         | Planting and Irrigation Details   |
| T1A        | Temporary Crash Cushion, Sand Filled (Unidirectional)   |
| T1B        | Temporary Crash Cushion, Sand Filled (Bidirectional)  |
| RSP T2     | Temporary Crash Cushion, Sand Filled (Shoulder Installations)   |
| T3         | Temporary Railing (Type K)  |
| T4         | Temporary Traffic Screen  |
| T7         | Construction Project Funding Identification Signs   |
| T10        | Traffic Control System for Lane Closure On Freeways and Expressways                                     |
| T10A       | Traffic Control System for Lane and Complete Closures On Freeways and Expressways                       |
| T11        | Traffic Control System for Lane Closure On Multilane Conventional Highways                              |
| RSP B0-3   | Bridge Details  |
| RSP B3-1   | Retaining Wall Type 1 - H=1200 Through 9100 mm  |
| RSP B3-8   | Retaining Wall Details No. 1  |
| B7-11      | Utility Details   |
| RSP B11-56 | Concrete Barrier Type 736   |
| RS1        | Roadside Signs, Typical Installation Details No. 1  |
| RS2        | Roadside Signs - Wood Post, Typical Installation Details No. 2  |
| RS4        | Roadside Signs, Typical Installation Details No. 4  |
| RSP S1     | Overhead Signs - Truss, Instructions and Examples   |
| RSP S2     | Overhead Signs - Truss, Single Post Type - Post Types II Thru VII                                       |
| RSP S3     | Overhead Signs - Truss, Two Post Type - Post Types I-S Thru VII-S                                       |
| S4         | Overhead Signs - Truss, Single Post Type - Structural Frame Members                                     |

|           |  |
|-----------|--|
| RSP S5    | Overhead Signs - Truss Two Post Type - Structural Frame Members  |
| RSP S6    | Overhead Signs - Truss, Structural Frame Details   |
| RSP S7    | Overhead Signs - Truss, Frame Juncture Details   |
| S8B       | Overhead Signs - Removable Sign Panel Frames - Overhead Formed Panel Mounting Details                    |
| S9        | Overhead Signs - Walkway Details No. 1   |
| S10       | Overhead Signs - Walkway Details No. 2   |
| RSP S11   | Overhead Signs - Walkway Safety Railing Details  |
| RSP S13   | Overhead Signs - Truss, Pile Foundation  |
| ES-1A     | Signal, Lighting and Electrical Systems - Symbols and Abbreviations                                      |
| ES-1B     | Signal, Lighting and Electrical Systems - Symbols and Abbreviations                                      |
| ES-2A     | Signal, Lighting and Electrical Systems - Service Equipment  |
| ES-2C     | Signal, Lighting and Electrical Systems - Service Equipment Notes, Type III Series                       |
| ES-2D     | Signal, Lighting and Electrical Systems - Service Equipment and Typical Wiring Diagram Type III-A Series |
| ES-2F     | Signal, Lighting and Electrical Systems - Service Equipment and Typical Wiring Diagram Type III-C Series |
| ES-5A     | Signal, Lighting and Electrical Systems - Detectors  |
| ES-5B     | Signal, Lighting and Electrical Systems - Detectors  |
| ES-5E     | Signal, Lighting and Electrical Systems - Detectors  |
| RSP ES-6A | Lighting Standards - Types 15, 21 and 22   |
| ES-6E     | Lighting Standards - Types 30 and 31   |
| RSP ES-6F | Lighting Standards - Type 30 and 31 Base Plate Details   |
| ES-8      | Signal, Lighting and Electrical Systems - Pull Box Details   |
| ES-9C     | Signal, Lighting and Electrical Systems - Electrical Details, Structure Installations                    |
| ES-10     | Signal, Lighting and Electrical Systems - Isolux Diagrams  |
| ES-11     | Signal, Lighting and Electrical Systems - Foundation Installations                                       |
| ES-13A    | Signal, Lighting and Electrical Systems - Splicing Details   |
| ES-13B    | Signal, Lighting and Electrical Systems - Wiring Details and Fuse Ratings                                |
| ES-15A    | Sign Illumination - Mercury Vapor Sign Illumination Equipment  |
| ES-15C    | Sign Illumination - Sign Illumination Equipment  |
| ES-15D    | Sign Illumination - Sign Illumination Control  |

Federal Project with DBE Goals (12-01-99)

## DEPARTMENT OF TRANSPORTATION

# NOTICE TO CONTRACTORS

**CONTRACT NO. 04-0T0504**

**04-Sol-80-0.9/6.4**

Sealed proposals for the work shown on the plans entitled:

## STATE OF CALIFORNIA; DEPARTMENT OF TRANSPORTATION; PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY IN SOLANO COUNTY IN AND NEAR VALLEJO FROM 0.1 km EAST OF CARQUINEZ BRIDGE TOLL PLAZA TO 0.7 km WEST OF REDWOOD STREET OVERCROSSING

will be received at the Department of Transportation, 1120 N Street, Room 0200, MS #26, Sacramento, CA 95814, until 2 o'clock p.m. on June 20, 2001, at which time they will be publicly opened and read in Room 0100 at the same address.

Proposal forms for this work are included in a separate book entitled:

Contract No. 04-0T0504

**STATE OF CALIFORNIA; DEPARTMENT OF TRANSPORTATION; PROPOSAL AND CONTRACT FOR  
CONSTRUCTION ON STATE HIGHWAY IN SOLANO COUNTY IN AND NEAR VALLEJO FROM 0.1 km  
EAST OF CARQUINEZ BRIDGE TOLL PLAZA TO 0.7 km WEST OF REDWOOD STREET OVERCROSSING**

General work description: Existing highway to be paved with asphalt concrete and concrete barrier to be constructed.

This project has a goal of 15 percent disadvantaged business enterprise (DBE) participation.  
No prebid meeting is scheduled for this project.

**THIS PROJECT IS SUBJECT TO THE "BUY AMERICA" PROVISIONS OF THE SURFACE  
TRANSPORTATION ASSISTANCE ACT OF 1982 AS AMENDED BY THE INTERMODAL SURFACE  
TRANSPORTATION EFFICIENCY ACT OF 1991.**

Bids are required for the entire work described herein.  
Bidder inquiries may be made as follows:

The Department will consider bidder inquiries only when a completed "Bidder Inquiry" form is submitted. A copy of the "Bidder Inquiry" form is available at the Internet address shown below. The bidder inquiry shall include the bidder's name and telephone number. Submit "Bidder Inquiry" forms to:

Construction Program Duty Senior  
111 Grand Avenue  
Oakland, CA 94612

Fax Number: (510) 622-1805  
E-mail: DUTY\_SENIOR\_DISTRICT04@ dot.ca.gov  
Tel. Number: (510) 286-5209

To expedite processing, submittal of "Bidder Inquiry" forms via Fax or E-mail is preferred.

To the extent feasible and at the discretion of the Department, completed "Bidder Inquiry" forms submitted for consideration will be investigated, and responses will be posted on the Internet at:

<http://www.dot.ca.gov/dist4/construction/CONTRACTINQUIRIES.html>

The responses to bidders' inquiries, unless incorporated into formal addenda to the contract, are not a part of the contract, and are provided for the bidder's convenience only. In some instances, the question and answer may represent a summary of the matters discussed rather than a word-for-word recitation. The availability or use of information provided in the responses to bidders' inquiries is not to be construed in any way as a waiver of the provisions of Section 2-1.03 of the Standard Specifications or any other provision of the contract, the plans, Standard Specifications or Special Provisions, nor to excuse the contractor from full compliance with those contract requirements. Bidders are cautioned that subsequent responses or contract addenda may affect or vary a response previously given.

At the time this contract is awarded, the Contractor shall possess either a Class A license or a combination of Class C licenses which constitutes a majority of the work.

This contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code, Section 12990.

Project plans, special provisions, and proposal forms for bidding this project can only be obtained at the Department of Transportation, Plans and Bid Documents, Room 0200, MS #26, Transportation Building, 1120 N Street, Sacramento, California 95814, FAX No. (916) 654-7028, Telephone No. (916) 654-4490. Use FAX orders to expedite orders for project plans, special provisions and proposal forms. FAX orders must include credit card charge number, card expiration date and authorizing signature. Project plans, special provisions, and proposal forms may be seen at the above Department of Transportation office and at the offices of the District Directors of Transportation at Irvine, Oakland, and the district in which the work is situated. Standard Specifications and Standard Plans are available through the State of California, Department of Transportation, Publications Unit, 1900 Royal Oaks Drive, Sacramento, CA 95815, Telephone No. (916) 445-3520.

Cross sections for this project are available.

The successful bidder shall furnish a payment bond and a performance bond.

The Department of Transportation hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

The U.S. Department of Transportation (DOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., eastern time, Telephone No. 1-800-424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available at the Labor Compliance Office at the offices of the District Director of Transportation for the district in which the work is situated, and available from the California Department of Industrial Relations' Internet Web Site at: <http://www.dir.ca.gov>. The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in the books issued for bidding purposes entitled "Proposal and Contract," and in copies of this book that may be examined at the offices described above where project plans, special provisions, and proposal forms may be seen. Addenda to modify the Federal minimum wage rates, if necessary, will be issued to holders of "Proposal and Contract" books. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

Attention is directed to the Federal minimum wage rate requirements in the books entitled "Proposal and Contract." If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question.

DEPARTMENT OF TRANSPORTATION

Deputy Director Transportation Engineering

Dated May 21, 2001

KEB

Contract No. «Dist»-«Contract\_No»

**COPY OF ENGINEER'S ESTIMATE**  
**(NOT TO BE USED FOR BIDDING PURPOSES)**  
**04-0T0504**

| Item     | Item Code | Item  | Unit of Measure | Estimated Quantity |
|----------|-----------|---|-----------------|--------------------|
| 1        | 070010    | PROGRESS SCHEDULE (CRITICAL PATH)             | LS              | LUMP SUM           |
| 2        | 070018    | TIME-RELATED OVERHEAD                         | WDAY            | 300                |
| 3        | 071322    | TEMPORARY FENCE (TYPE CL-1.8)                 | M               | 90                 |
| 4        | 074019    | PREPARE STORM WATER POLLUTION PREVENTION PLAN | LS              | LUMP SUM           |
| 5        | 074020    | WATER POLLUTION CONTROL                       | LS              | LUMP SUM           |
| 6<br>(S) | 120090    | CONSTRUCTION AREA SIGNS                       | LS              | LUMP SUM           |
| 7<br>(S) | 120100    | TRAFFIC CONTROL SYSTEM                        | LS              | LUMP SUM           |
| 8<br>(S) | 120149    | TEMPORARY PAVEMENT MARKING (PAINT)            | M2              | 40                 |
| 9<br>(S) | 120159    | TEMPORARY TRAFFIC STRIPE (PAINT)              | M               | 43 800             |
| 10       | 120165    | CHANNELIZER (SURFACE MOUNTED)                 | EA              | 380                |
| 11       | 120300    | TEMPORARY PAVEMENT MARKER                     | EA              | 2450               |
| 12       | 128650    | PORTABLE CHANGEABLE MESSAGE SIGN              | EA              | 2                  |
| 13       | 129000    | TEMPORARY RAILING (TYPE K)                    | M               | 23 400             |
| 14       | 129100    | TEMPORARY CRASH CUSHION MODULE                | EA              | 530                |
| 15       | 150206    | ABANDON CULVERT                               | EA              | 1                  |
| 16       | 150608    | REMOVE CHAIN LINK FENCE                       | M               | 180                |
| 17       | 150662    | REMOVE METAL BEAM GUARD RAILING               | M               | 600                |
| 18       | 150665    | REMOVE SINGLE METAL BEAM BARRIER              | M               | 450                |
| 19       | 150667    | REMOVE DOUBLE METAL BEAM BARRIER              | M               | 4980               |
| 20       | 150711    | REMOVE PAINTED TRAFFIC STRIPE                 | M               | 8230               |



| Item      | Item Code | Item   | Unit of Measure | Estimated Quantity |
|-----------|-----------|--|-----------------|--------------------|
| 21        | 019714    | REMOVE WHITE THERMOPLASTIC TRAFFIC STRIPE              | M               | 9390               |
| 22        | 019728    | REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE             | M               | 120                |
| 23        | 150722    | REMOVE PAVEMENT MARKER                                 | EA              | 3200               |
| 24        | 150747    | REMOVE ROADSIDE SIGN (STRAP AND SADDLE BRACKET METHOD) | EA              | 3                  |
| 25<br>(S) | 150760    | REMOVE SIGN STRUCTURE                                  | EA              | 2                  |
| 26        | 150771    | REMOVE ASPHALT CONCRETE DIKE                           | M               | 3840               |
| 27        | 150805    | REMOVE CULVERT   | M               | 87                 |
| 28        | 150820    | REMOVE INLET   | EA              | 44                 |
| 29        | 150821    | REMOVE HEADWALL  | EA              | 3                  |
| 30        | 150859    | REMOVE ASPHALT CONCRETE OVERSIDE DRAIN                 | EA              | 9                  |
| 31<br>(S) | 019715    | SALVAGE CRASH CUSHION MODULE                           | EA              | 48                 |
| 32<br>(S) | 019716    | RECONSTRUCT METAL BEAM GUARD RAILING (STEEL POST)      | M               | 200                |
| 33        | 152386    | RELOCATE ROADSIDE SIGN-ONE POST                        | EA              | 1                  |
| 34        | 152387    | RELOCATE ROADSIDE SIGN-TWO POST                        | EA              | 2                  |
| 35<br>(S) | 152394    | RELOCATE SIGN STRUCTURE                                | EA              | 1                  |
| 36        | 019717    | ADJUST INLET (TYPE I)                                  | EA              | 3                  |
| 37        | 019718    | ADJUST INLET (TYPE II)                                 | EA              | 29                 |
| 38        | 152440    | ADJUST MANHOLE TO GRADE                                | EA              | 1                  |
| 39        | 019719    | MODIFY INLET (METHOD I)                                | EA              | 9                  |
| 40        | 019720    | MODIFY INLET (METHOD II)                               | EA              | 5                  |

| Item      | Item Code | Item  | Unit of Measure | Estimated Quantity |
|-----------|-----------|---|-----------------|--------------------|
| 41        | 019721    | MODIFY INLET (METHOD III)                               | EA              | 3                  |
| 42        | 152609    | MODIFY INLET TO MANHOLE                                 | EA              | 10                 |
| 43        | 153151    | COLD PLANE ASPHALT CONCRETE PAVEMENT<br>(25 MM MAXIMUM) | M2              | 230                |
| 44        | 153153    | COLD PLANE ASPHALT CONCRETE PAVEMENT<br>(45 MM MAXIMUM) | M2              | 2010               |
| 45        | 153154    | COLD PLANE ASPHALT CONCRETE PAVEMENT<br>(60 MM MAXIMUM) | M2              | 6080               |
| 46        | 153210    | REMOVE CONCRETE   | M3              | 2300               |
| 47        | 155003    | CAP INLET   | EA              | 16                 |
| 48        | 155006    | CAP RISER   | EA              | 1                  |
| 49        | 160101    | CLEARING AND GRUBBING                                   | LS              | LUMP SUM           |
| 50        | 160120    | REMOVE TREE   | EA              | 88                 |
| 51        | 190110    | LEAD COMPLIANCE PLAN                                    | LS              | LUMP SUM           |
| 52        | 190101    | ROADWAY EXCAVATION                                      | M3              | 7900               |
| 53        | 190103    | ROADWAY EXCAVATION (TYPE Y) (AERIALY<br>DEPOSITED LEAD) | M3              | 13 600             |
| 54        | 190185    | SHOULDER BACKING  | STA             | 26                 |
| 55        | 192037    | STRUCTURE EXCAVATION (RETAINING WALL)                   | M3              | 1480               |
| 56        | 193013    | STRUCTURE BACKFILL (RETAINING WALL)                     | M3              | 1230               |
| 57        | 193031    | PERVIOUS BACKFILL MATERIAL (RETAINING<br>WALL)          | M3              | 200                |
| 58        | 198200    | SUBGRADE ENHANCEMENT FABRIC                             | M2              | 18 000             |
| 59        | 019723    | CONCRETE PAVERS   | M2              | 6290               |
| 60<br>(S) | 203001    | EROSION CONTROL (BLANKET)                               | M2              | 820                |

| Item      | Item Code | Item  | Unit of Measure | Estimated Quantity |
|-----------|-----------|---|-----------------|--------------------|
| 61<br>(S) | 203003    | STRAW (EROSION CONTROL)                             | TONN            | 4.5                |
| 62<br>(S) | 203014    | FIBER (EROSION CONTROL)                             | KG              | 390                |
| 63<br>(S) | 203024    | COMPOST (EROSION CONTROL)                           | KG              | 900                |
| 64<br>(S) | 203045    | PURE LIVE SEED (EROSION CONTROL)                    | KG              | 85                 |
| 65<br>(S) | 203056    | COMMERCIAL FERTILIZER (EROSION CONTROL)             | KG              | 230                |
| 66<br>(S) | 203061    | STABILIZING EMULSION (EROSION CONTROL)              | KG              | 160                |
| 67<br>(S) | 208000    | IRRIGATION SYSTEM                                   | LS              | LUMP SUM           |
| 68<br>(S) | 208910    | EXTEND 250 MM CONDUIT                               | M               | 110                |
| 69        | 209801    | MAINTENANCE VEHICLE PULLOUT                         | EA              | 9                  |
| 70        | 220101    | FINISHING ROADWAY                                   | LS              | LUMP SUM           |
| 71        | 250401    | CLASS 4 AGGREGATE SUBBASE                           | M3              | 7500               |
| 72        | 390145    | REPLACE ASPHALT CONCRETE SURFACING                  | M3              | 3880               |
| 73        | 390155    | ASPHALT CONCRETE (TYPE A)                           | TONN            | 64 600             |
| 74        | 390165    | ASPHALT CONCRETE (OPEN GRADED)                      | TONN            | 12 900             |
| 75        | 390206    | RUBBERIZED ASPHALT CONCRETE (TYPE G)                | TONN            | 7540               |
| 76        | 391031    | PAVING ASPHALT (BINDER-PAVEMENT REINFORCING FABRIC) | TONN            | 100                |
| 77        | 393001    | PAVEMENT REINFORCING FABRIC                         | M2              | 93 500             |
| 78        | 394002    | PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)         | M2              | 88                 |
| 79        | 394040    | PLACE ASPHALT CONCRETE DIKE (TYPE A)                | M               | 1900               |
| 80        | 394044    | PLACE ASPHALT CONCRETE DIKE (TYPE C)                | M               | 390                |

| Item        | Item Code | Item   | Unit of Measure | Estimated Quantity |
|-------------|-----------|--|-----------------|--------------------|
| 81          | 394048    | PLACE ASPHALT CONCRETE DIKE (TYPE E)                           | M               | 9820               |
| 82          | 394049    | PLACE ASPHALT CONCRETE DIKE (TYPE F)                           | M               | 380                |
| 83          | 397001    | ASPHALTIC EMULSION (PAINT BINDER)                              | TONN            | 300                |
| 84          | 510060    | STRUCTURAL CONCRETE, RETAINING WALL                            | M3              | 800                |
| 85<br>(F)   | 510502    | MINOR CONCRETE (MINOR STRUCTURE)                               | M3              | 118                |
| 86          | 510526    | MINOR CONCRETE (BACKFILL)                                      | M3              | 14                 |
| 87<br>(S)   | 520103    | BAR REINFORCING STEEL (RETAINING WALL)                         | KG              | 49 100             |
| 88<br>(F)   | 560218    | FURNISH SIGN STRUCTURE (TRUSS)                                 | KG              | 9000               |
| 89<br>(S-F) | 560219    | INSTALL SIGN STRUCTURE (TRUSS)                                 | KG              | 9000               |
| 90<br>(S)   | 561009    | 920 MM CAST-IN-DRILLED-HOLE CONCRETE PILE<br>(SIGN FOUNDATION) | M               | 15.5               |
| 91<br>(S)   | 568001    | INSTALL SIGN (STRAP AND SADDLE BRACKET<br>METHOD)              | EA              | 3                  |
| 92          | 620909    | 450 MM ALTERNATIVE PIPE CULVERT                                | M               | 16                 |
| 93          | 620913    | 600 MM ALTERNATIVE PIPE CULVERT                                | M               | 2                  |
| 94          | 650067    | 300 MM REINFORCED CONCRETE PIPE                                | M               | 96                 |
| 95          | 650069    | 450 MM REINFORCED CONCRETE PIPE                                | M               | 320                |
| 96          | 650075    | 600 MM REINFORCED CONCRETE PIPE                                | M               | 3                  |
| 97          | 650079    | 900 MM REINFORCED CONCRETE PIPE                                | M               | 2                  |
| 98          | 705042    | 300 MM STEEL FLARED END SECTION                                | EA              | 2                  |
| 99          | 705044    | 450 MM STEEL FLARED END SECTION                                | EA              | 7                  |
| 100         | 731502    | MINOR CONCRETE (MISCELLANEOUS<br>CONSTRUCTION)                 | M3              | 270                |

| Item       | Item Code | Item                                 | Unit of Measure | Estimated Quantity |
|------------|-----------|--------------------------------------|-----------------|--------------------|
| 101<br>(F) | 750001    | MISCELLANEOUS IRON AND STEEL         | KG              | 22 058             |
| 102<br>(S) | 800391    | CHAIN LINK FENCE (TYPE CL-1.8)       | M               | 164                |
| 103<br>(S) | 820107    | DELINEATOR (CLASS 1)                 | EA              | 490                |
| 104<br>(S) | 832003    | METAL BEAM GUARD RAILING (WOOD POST) | M               | 690                |
| 105        | 833080    | CONCRETE BARRIER (TYPE K)            | M               | 230                |
| 106        | 839551    | TERMINAL SECTION (TYPE B)            | EA              | 15                 |
| 107<br>(S) | 839565    | TERMINAL SYSTEM (TYPE SRT)           | EA              | 34                 |
| 108<br>(S) | 839568    | TERMINAL ANCHOR ASSEMBLY (TYPE SFT)  | EA              | 1                  |
| 109<br>(S) | 839569    | TERMINAL ANCHOR ASSEMBLY (TYPE CA)   | EA              | 1                  |
| 110<br>(S) | 839591    | CRASH CUSHION, SAND FILLED           | EA              | 2                  |
| 111<br>(S) | 839604    | CRASH CUSHION (REACT 9CBB)           | EA              | 3                  |
| 112        | 839701    | CONCRETE BARRIER (TYPE 60)           | M               | 2000               |
| 113        | 019725    | CONCRETE BARRIER (TYPE 60A MODIFIED) | M               | 97                 |
| 114        | 839703    | CONCRETE BARRIER (TYPE 60C)          | M               | 2730               |
| 115        | 839704    | CONCRETE BARRIER (TYPE 60D)          | M               | 660                |
| 116        | 839705    | CONCRETE BARRIER (TYPE 60E)          | M               | 230                |
| 117        | 019726    | CONCRETE BARRIER (TYPE 735A)         | M               | 640                |
| 118        | 019727    | CONCRETE BARRIER (TYPE 60R)          | M               | 46                 |
| 119<br>(S) | 840515    | THERMOPLASTIC PAVEMENT MARKING       | M2              | 190                |
| 120<br>(S) | 840561    | 100 MM THERMOPLASTIC TRAFFIC STRIPE  | M               | 34 800             |

| Item       | Item Code | Item  | Unit of Measure | Estimated Quantity |
|------------|-----------|---|-----------------|--------------------|
| 121<br>(S) | 840563    | 200 MM THERMOPLASTIC TRAFFIC STRIPE                             | M               | 4470               |
| 122<br>(S) | 840564    | 200 MM THERMOPLASTIC TRAFFIC STRIPE<br>(BROKEN 3.66 M - 0.92 M) | M               | 1240               |
| 123<br>(S) | 840571    | 100 MM THERMOPLASTIC TRAFFIC STRIPE<br>(BROKEN 5.18 M - 2.14 M) | M               | 880                |
| 124<br>(S) | 850101    | PAVEMENT MARKER (NON-REFLECTIVE)                                | EA              | 5860               |
| 125<br>(S) | 850111    | PAVEMENT MARKER (RETROREFLECTIVE)                               | EA              | 4040               |
| 126<br>(S) | 860460    | LIGHTING AND SIGN ILLUMINATION                                  | LS              | LUMP SUM           |
| 127        | 999990    | MOBILIZATION  | LS              | LUMP SUM           |

**STATE OF CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**

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**SPECIAL PROVISIONS**

**Annexed to Contract No. 04-0T0504**

**SECTION 1. SPECIFICATIONS AND PLANS**

The work embraced herein shall conform to the provisions in the Standard Specifications dated July 1999, and the Standard Plans dated July 1999, of the Department of Transportation insofar as the same may apply, and these special provisions.

Amendments to the Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.04, "Coordination and Interpretation of Plans, Standard Specifications and Special Provisions," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the indented text or table following the term shall be considered an amendment to the Standard Specifications. In case of conflict between such amendments and the Standard Specifications, the amendments shall take precedence over and be used in lieu of the conflicting portions.

In case of conflict between the Standard Specifications and these special provisions, the special provisions shall take precedence over and shall be used in lieu of the conflicting portions.

**SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS**

**2-1.01 GENERAL**

The bidder's attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of the Proposal form and the submission of the bid.

In addition to the subcontractors required to be listed in conformance with Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications, each proposal shall have listed therein the portion of work that will be performed by each subcontractor listed.

The Bidder's Bond form mentioned in the last paragraph in Section 2-1.07, "Proposal Guaranty," of the Standard Specifications will be found following the signature page of the Proposal.

Submit request for substitution of an "or equal" item, and the data substantiating the request to the Department of Transportation, Division Of Construction - Duty Senior, Mail Station: 3 - B, 111 Grand Avenue / P. O. Box 23660, Oakland, Ca 94623-0660, so that the request is received by the Department by close of business on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. Each subcontract signed by the bidder must include this assurance.

**2-1.015 FEDERAL LOBBYING RESTRICTIONS**

Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier subrecipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Proposal. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal. Signing the Proposal shall constitute signature of the Certification.

The above-referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

- A. A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- B. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,
- C. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

#### **2-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

This project is subject to Part 26, Title 49, Code of Federal Regulations entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." The Regulations in their entirety are incorporated herein by this reference.

Bidders shall be fully informed respecting the requirements of the Regulations and the Department's Disadvantaged Business Enterprise (DBE) program developed pursuant to the Regulations; particular attention is directed to the following matters:

- A. A DBE must be a small business concern as defined pursuant to Section 3 of U.S. Small Business Act and relevant regulations promulgated pursuant thereto.
- B. A DBE may participate as a prime contractor, subcontractor, joint venture partner with a prime or subcontractor, vendor of material or supplies, or as a trucking company.
- C. A DBE bidder, not bidding as a joint venture with a non-DBE, will be required to document one or a combination of the following:
  - 1. The bidder will meet the goal by performing work with its own forces.
  - 2. The bidder will meet the goal through work performed by DBE subcontractors, suppliers or trucking companies.
  - 3. The bidder, prior to bidding, made adequate good faith efforts to meet the goal.
- D. A DBE joint venture partner must be responsible for specific contract items of work, or portions thereof. Responsibility means actually performing, managing and supervising the work with its own forces. The DBE joint venture partner must share in the capital contribution, control, management, risks and profits of the joint venture. The DBE joint venturer must submit the joint venture agreement with the proposal or the DBE Information form required in the Section entitled "Submission of DBE Information" of these special provisions.
- E. A DBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work.
- F. DBEs must be certified by either the California Department of Transportation, or by a participating State of California or local agency which certifies in conformance with Title 49, Code of Federal Regulations, Part 26, as of the date of bid opening. It is the Contractor's responsibility to verify that DBEs are certified. Listings of DBEs certified by the Department are available from the following sources:
  - 1. The Department's DBE Directory, which is published quarterly. This Directory may be obtained from the Department of Transportation, Materiel Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520.



2. The Department's Electronic Information Bulletin Board Service, which is accessible by modem and is updated weekly. The Bulletin Board may be accessed by first contacting the Department's Business Enterprise Program at Telephone: (916) 227-8937 and obtaining a user identification and password.
3. The Department's web site at <http://www.dot.ca.gov/hq/bep/index.htm>.
4. The organizations listed in the Section entitled "DBE Goal for this Project" of these special provisions.

G. Credit for materials or supplies purchased from DBEs will be as follows:

1. If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
2. If the materials or supplies are purchased from a DBE regular dealer, 60 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a DBE regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph G.2. if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph G.2.
3. Credit for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer will be limited to the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.

H. Credit for DBE trucking companies will be as follows:

1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting the DBE goal.
2. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
4. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
5. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.
6. For the purposes of this paragraph H, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

- I. Noncompliance by the Contractor with the requirements of the regulations constitutes a breach of this contract and may result in termination of the contract or other appropriate remedy for a breach of this contract.
- J. Bidders are encouraged to use services offered by financial institutions owned and controlled by DBEs.

## 2-1.02A DBE GOAL FOR THIS PROJECT

The Department has established the following goal for Disadvantaged Business Enterprise (DBE) participation for this project:

Disadvantaged Business Enterprise (DBE): 15 percent

Bidders may use the services of the following firms to contact interested DBEs. These firms are available to assist DBEs in preparing bids for subcontracting or supplying materials.

The following firms may be contacted for projects in the following locations:

|   |  |
|---|--|
| Districts 04, 05 (except San Luis Obispo and Santa Barbara Counties),<br>06 (except Kern County) and 10:  | Districts 08, 11 and 12:   |
| Triaxial Management Services, Inc.<br>- Oakland<br><br>1545 Willow Street, 1st Floor<br>Oakland, CA 94607<br>Telephone - (510) 286-1313<br>FAX No. - (510) 286-6792 | Triaxial Management Services, Inc.<br>- San Diego<br>2725 Congress Street,<br>Suite 1-D<br>San Diego, CA 92110<br>Telephone - (619) 543-5109<br>FAX No. - (619) 543-5108 |
| Districts 07 and 08;<br>in San Luis Obispo and Santa Barbara Counties<br>in District 05; and in Kern County in District 06:   | Districts 01, 02, 03 and 09:   |
| Triaxial Management Services, Inc.<br>- Los Angeles<br>2594 Industry Way, Suite 101<br>Lynwood, CA 90262<br>Telephone - (310) 537-6677<br>FAX No. - (310) 637-0128  | Triaxial Management Services, Inc.<br>- Sacramento<br>930 Alhambra Blvd., #205<br>Sacramento, CA 95816<br>Telephone - (916) 553-4172<br>FAX No. - (916) 553-4173         |

## 2-1.02B SUBMISSION OF DBE INFORMATION

The required DBE information shall be submitted on the "CALTRANS BIDDER - DBE INFORMATION" form included in the Proposal. If the DBE information is not submitted with the bid, the DBE Information form shall be removed from the documents prior to submitting the bid.

It is the bidder's responsibility to make enough work available to DBEs and to select those portions of the work or material needs consistent with the available DBEs to meet the goal for DBE participation or to provide information to establish that, prior to bidding, the bidder made adequate good faith efforts to do so.

If DBE information is not submitted with the bid, the apparent successful bidder (low bidder), the second low bidder and the third low bidder shall submit DBE information to the Department of Transportation, 1120 N Street, Room 0200, MS #26, Sacramento, California 95814 so the information is received by the Department no later than 4:00 p.m. on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening. DBE information sent by U.S. Postal Service certified mail with return receipt and certificate of mailing and mailed on or before the third day, not including Saturdays, Sundays and legal holidays, following bid opening will be accepted even if it is received after the fourth day following bid opening. Failure to submit the required DBE information by the time specified will be grounds for finding the bid or proposal nonresponsive. Other bidders need not submit DBE information unless requested to do so by the Department.

The bidder's DBE information shall establish that good faith efforts to meet the DBE goal have been made. To establish good faith efforts, the bidder shall demonstrate that the goal will be met or that, prior to bidding, adequate good faith efforts to meet the goal were made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DBE goal, their submittal should also include their adequate good faith efforts information along with their DBE goal information to protect their eligibility for award of the contract in the event the Department, in its review, finds that the goal has not been met.

The bidder's DBE information shall include the names, addresses and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, the dollar value of each DBE transaction, and a written confirmation from the DBE that it is participating in the contract. A copy of the DBE's quote will serve as written confirmation that the DBE is participating in the contract. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of that work. The work that a DBE prime contractor has committed to performing with its own forces as well as the work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies will count toward the goal.

The information necessary to establish the bidder's adequate good faith efforts to meet the DBE goal should include:

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder.
- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested.
- C. The items of work which the bidder made available to DBE firms, including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to meet the DBE goal was made available to DBE firms.
- D. The names, addresses and phone numbers of rejected DBE firms, the firms selected for that work, and the reasons for the bidder's choice.
- E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs.
- F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate.
- G. The names of agencies contacted to provide assistance in contacting, recruiting and using DBE firms.
- H. Any additional data to support a demonstration of good faith efforts.

### **SECTION 3. AWARD AND EXECUTION OF CONTRACT**

The bidder's attention is directed to the provisions in Section 3, "Award and Execution of Contract," of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed and who has met the goal for DBE participation or has demonstrated, to the satisfaction of the Department, adequate good faith efforts to do so. Meeting the goal for DBE participation or demonstrating, to the satisfaction of the Department, adequate good faith efforts to do so is a condition for being eligible for award of contract.

A "Payee Data Record" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to facilitate the collection of taxpayer identification data. The form shall be completed and returned to the Department by the successful bidder with the executed contract and contract bonds. For the purposes of the form, payee shall be deemed to mean the successful bidder. The form is not to be completed for subcontractors or suppliers. Failure to complete and return the "Payee Data Record" form to the Department as provided herein will result in the retention of 31 percent of payments due the contractor and penalties of up to \$20,000. This retention of payments for failure to complete the "Payee Data Record" form is in addition to any other retention of payments due the Contractor.

### **SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES**

Attention is directed to the provisions in Section 8-1.03, "Beginning of Work," in Section 8-1.06, "Time of Completion," and in Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these special provisions.

The Contractor shall begin work within 15 calendar days after the contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation.

This work shall be diligently prosecuted to completion before the expiration of **300 WORKING DAYS** beginning on the fifteenth calendar day after approval of the contract.

The Contractor shall pay to the State of California the sum of \$1500 per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

**SECTION 5. GENERAL**  
**SECTION 5-1. MISCELLANEOUS**

**5-1.01 PLANS AND WORKING DRAWINGS**

When the specifications require working drawings to be submitted to the Division of Structure Design, the drawings shall be submitted to: Division of Structure Design, Documents Unit, Mail Station 9, 1801 30th Street, Sacramento, CA 95816, Telephone 916 227-8252.

**5-1.011 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK**

The second paragraph of Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications is amended to read:

- Where the Department has made investigations of site conditions, including subsurface conditions in areas where work is to be performed under the contract, or in other areas, some of which may constitute possible local material sources, bidders or Contractors may, upon written request, inspect the records of the Department as to those investigations subject to and upon the conditions hereinafter set forth.

Attention is directed to "Differing Site Conditions" of these special provisions regarding physical conditions at the site which may differ from those indicated in "Materials Information," log of test borings or other geotechnical information obtained by the Department's investigation of site conditions.

**5-1.012 DIFFERING SITE CONDITIONS**

Attention is directed to Section 5-1.116, "Differing Site Conditions," of the Standard Specifications.

During the progress of the work, if subsurface or latent conditions are encountered at the site differing materially from those indicated in the "Materials Information," log of test borings, other geotechnical data obtained by the Department's investigation of subsurface conditions, or an examination of the conditions above ground at the site, the party discovering those conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and before the affected work is performed.

The Contractor will be allowed 15 days from the notification of the Engineer's determination of whether or not an adjustment of the contract is warranted, in which to file a notice of potential claim in conformance with the provisions of Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications and as specified herein; otherwise the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct. The notice of potential claim shall set forth in what respects the Contractor's position differs from the Engineer's determination and provide any additional information obtained by the Contractor, including but not limited to additional geotechnical data. The notice of potential claim shall be accompanied by the Contractor's certification that the following were made in preparation of the bid: a review of the contract, a review of the "Materials Information," a review of the log of test borings and other records of geotechnical data to the extent they were made available to bidders prior to the opening of bids, and an examination of the conditions above ground at the site. Supplementary information, obtained by the Contractor subsequent to the filing of the notice of potential claim, shall be submitted to the Engineer in an expeditious manner.

**5-1.015 LABORATORY**

When a reference is made in the specifications to the "Laboratory," the reference shall mean the Division of Materials Engineering and Testing Services and the Division of Structural Foundations of the Department of Transportation, or established laboratories of the various Districts of the Department, or other laboratories authorized by the Department to test materials and work involved in the contract. When a reference is made in the specifications to the "Transportation Laboratory," the reference shall mean the Division of Materials Engineering and Testing Services and the Division of Structural Foundations, located at 5900 Folsom Boulevard, Sacramento, CA 95819, Telephone (916) 227-7000.

**5-1.017 CONTRACT BONDS**

Attention is directed to Section 3-1.02, "Contract Bonds," of the Standard Specifications and these special provisions.

The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

### **5-1.018 EXCAVATION SAFETY PLANS**

Section 5-1.02A, "Trench Excavation Safety Plans," of the Standard Specifications is amended to read:

#### **5-1.02A Excavation Safety Plans**

- The Construction Safety Orders of the Division of Occupational Safety and Health shall apply to all excavations. For all excavations 1.5 m or more in depth, the Contractor shall submit to the Engineer a detailed plan showing the design and details of the protective systems to be provided for worker protection from the hazard of caving ground during excavation. The detailed plan shall include any tabulated data and any design calculations used in the preparation of the plan. Excavation shall not begin until the detailed plan has been reviewed and approved by the Engineer.
- Detailed plans of protective systems for which the Construction Safety Orders require design by a registered professional engineer shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California, and shall include the soil classification, soil properties, soil design calculations that demonstrate adequate stability of the protective system, and any other design calculations used in the preparation of the plan.
- No plan shall allow the use of a protective system less effective than that required by the Construction Safety Orders.
- If the detailed plan includes designs of protective systems developed only from the allowable configurations and slopes, or Appendices, contained in the Construction Safety Orders, the plan shall be submitted at least 5 days before the Contractor intends to begin excavation. If the detailed plan includes designs of protective systems developed from tabulated data, or designs for which design by a registered professional engineer is required, the plan shall be submitted at least 3 weeks before the Contractor intends to begin excavation.
- Attention is directed to Section 7-1.01E, "Trench Safety."

The third paragraph of Section 19-1.02, "Preservation of Property," of the Standard Specifications is amended to read:

- In addition to the provisions in Sections 5-1.02, "Plans and Working Drawings," and 5-1.02A, "Excavation Safety Plans," detailed plans of the protective systems for excavations on or affecting railroad property will be reviewed for adequacy of protection provided for railroad facilities, property, and traffic. These plans shall be submitted at least 9 weeks before the Contractor intends to begin excavation requiring the protective systems. Approval by the Engineer of the detailed plans for the protective systems will be contingent upon the plans being satisfactory to the railroad company involved.

### **5-1.019 COST REDUCTION INCENTIVE**

Attention is directed to Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

Prior to preparing a cost reduction proposal, the Contractor shall request a meeting with the Engineer to discuss the proposal in concept and to determine the merit of the cost reduction proposal. Items of discussion will also include permit issues, impact on other projects, impact on the project schedule, peer reviews, and review times required by the Department and other agencies.

### **5-1.02 LABOR NONDISCRIMINATION**

Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

#### **NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM**

##### **(GOV. CODE, SECTION 12990)**

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt State contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The specifications are applicable to all nonexempt State construction contracts and subcontracts of \$5000 or more.

### **5-1.03 INTEREST ON PAYMENTS**

Interest shall be payable on progress payments, payments after acceptance, final payments, extra work payments, and claim payments as follows:

- A. Unpaid progress payments, payment after acceptance, and final payments shall begin to accrue interest 30 days after the Engineer prepares the payment estimate.

- B. Unpaid extra work bills shall begin to accrue interest 30 days after preparation of the first pay estimate following receipt of a properly submitted and undisputed extra work bill. To be properly submitted, the bill must be submitted within 7 days of the performance of the extra work and in conformance with the provisions in Section 9-1.03C, "Records," and Section 9-1.06, "Partial Payments," of the Standard Specifications. An undisputed extra work bill not submitted within 7 days of performance of the extra work will begin to accrue interest 30 days after the preparation of the second pay estimate following submittal of the bill.
- C. The rate of interest payable for unpaid progress payments, payments after acceptance, final payments, and extra work payments shall be 10 percent per annum.
- D. The rate of interest payable on a claim, protest or dispute ultimately allowed under this contract shall be 6 percent per annum. Interest shall begin to accrue 61 days after the Contractor submits to the Engineer information in sufficient detail to enable the Engineer to ascertain the basis and amount of said claim, protest or dispute.

The rate of interest payable on any award in arbitration shall be 6 percent per annum if allowed under the provisions of Civil Code Section 3289.

#### **5-1.031 FINAL PAYMENT AND CLAIMS**

Attention is directed to Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications.

If the Contractor files a timely written statement of claims in response to the proposed final estimate, the District that administers the contract will submit a claim position letter to the Contractor by hand delivery or deposit in the U.S. mail within 135 days of acceptance of the contract. The claim position letter will delineate the District's position on the Contractor's claims. If the Contractor disagrees with the claim position letter, the Contractor shall submit a written notification of its disagreement to be received by the District not later than 15 days after the Contractor's receipt of the claim position letter. The written notification of disagreement shall set forth the basis for the Contractor's disagreement and be submitted to the office designated in the claim position letter. The Contractor's failure to provide a timely, written notification of disagreement shall constitute the Contractor's acceptance and agreement with the determinations provided in the claim position letter and with final payment pursuant to the claim position letter.

If the Contractor files a timely notification of disagreement with the District claim position letter, the board of review designated by the District Director to review claims that remain in dispute will meet with the Contractor within 45 days after receipt by the District of the notification of disagreement. Attendance by the Contractor at the board of review meeting shall be mandatory.

If the District fails to submit a claim position letter to the Contractor within 135 days after the acceptance of the contract and the Contractor has claims that remain in dispute, the Contractor may request a meeting with the board of review designated by the District Director to review claims that remain in dispute. The Contractor's request for a meeting shall identify the claims that remain in dispute. If the Contractor files a request for a meeting, the board of review will meet with the Contractor within 45 days after the District receives the request for the meeting. Attendance by the Contractor at the District Director's board of review meeting shall be mandatory.

Failure of the Contractor to file a timely written statement of claims in response to the proposed final estimate, or to file a timely notification of disagreement with the District claim position letter, or to attend the District Director's board of review meeting shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract and shall be a bar to arbitration in conformance with the requirements in Section 10240.2 of the California Public Contract Code.

#### **5-1.04 PUBLIC SAFETY**

The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

- A. Excavations.—The near edge of the excavation is 3.6 m or less from the edge of the lane, except:
  - 1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
  - 2. Excavations less than 0.3-m deep.
  - 3. Trenches less than 0.3-m wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m in diameter.
  - 4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
  - 5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical:horizontal).
  - 6. Excavations protected by existing barrier or railing.

- B. Temporarily Unprotected Permanent Obstacles.—The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.
- C. Storage Areas.—Material or equipment is stored within 3.6 m of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications, shall be offset a minimum of 4.6 m from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 0.3-m transversely to 3 m longitudinally with respect to the edge of the traffic lane. If the 4.6-m minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Temporary railing (Type K) shall conform to the provisions in Section 12-3.08, "Temporary Railing (Type K)," of the Standard Specifications. Temporary railing (Type K), conforming to the details shown on 1999 Standard Plan T3, may be used. Temporary railing (Type K) fabricated prior to January 1, 1993, and conforming to 1988 Standard Plan B11-30 may be used, provided the fabrication date is printed on the required Certificate of Compliance.

Temporary crash cushion modules shall conform to the provisions in "Temporary Crash Cushion Module" of these special provisions.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

| Approach Speed of Public Traffic (Posted Limit)<br>(Kilometers Per Hour) | Work Areas   |
|--|--|
| Over 72 (45 Miles Per Hour)  | Within 1.8 m of a traffic lane but not on a traffic lane |
| 56 to 72 (35 to 45 Miles Per Hour)                                       | Within 0.9-m of a traffic lane but not on a traffic lane |

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 3 m without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

Full compensation for conforming to the provisions in this section "Public Safety," including furnishing and installing temporary railing (Type K) and temporary crash cushion modules, shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

### 5-1.05 SURFACE MINING AND RECLAMATION ACT

Attention is directed to the Surface Mining and Reclamation Act of 1975, commencing in Public Resources Code, Mining and Geology, Section 2710, which establishes regulations pertinent to surface mining operations, and to California Public Contract Code Section 10295.5.

Material from mining operations furnished for this project shall only come from permitted sites in compliance with California Public Contract Code Section 10295.5.

The requirements of this section shall apply to materials furnished for the project, except for acquisition of materials in conformance with the provisions in Section 4-1.05, "Use of Materials Found on the Work," of the Standard Specifications.

### 5-1.06 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe. The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In conformance with Section 25914.1 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

#### **5-1.07 YEAR 2000 COMPLIANCE**

This contract is subject to Year 2000 Compliance for automated devices in the State of California.

Year 2000 compliance for automated devices in the State of California is achieved when embedded functions have or create no logical or mathematical inconsistencies when dealing with dates prior to and beyond 1999. The year 2000 is recognized and processed as a leap year. The product shall operate accurately in the manner in which the product was intended for date operation without requiring manual intervention.

The Contractor shall provide the Engineer a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for all automated devices furnished for the project.

#### **5-1.075 BUY AMERICA REQUIREMENTS**

Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the regulations adopted pursuant thereto. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coatings that protect or enhance the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall specifically certify that all manufacturing processes for the materials occurred in the United States, except for the above exceptions.

The requirements imposed by the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of the materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or \$2500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of the foreign steel and iron prior to incorporating the materials into the work.

#### **5-1.08 SUBCONTRACTOR AND DBE RECORDS**

The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all of these firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Upon completion of the contract, a summary of these records shall be prepared on Form CEM-2402 (F) and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer. The form shall be furnished to the Engineer within 90 days from the date of contract acceptance. \$10,000 will be withheld from payment until the Form CEM-2402 (F) is submitted. The amount will be returned to the Contractor when a satisfactory Form CEM-2402 (F) is submitted.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount paid to DBE trucking companies listed in the Contractor's DBE information. This monthly documentation shall indicate the portion of the revenue paid to DBE trucking companies which is claimed toward DBE participation. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The records must confirm that the amount of credit claimed toward DBE participation conforms with Section 2-1.02, "Disadvantaged Business Enterprise," of these special provisions.

The Contractor shall also obtain and submit documentation to the Engineer showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all trucks used during that month for which DBE participation will be claimed. This documentation shall be submitted on Form CEM-2404 (F).



### **5-1.083 DBE CERTIFICATION STATUS**

If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract, Form CEM-2403 (F) indicating the DBE's existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer within 90 days from the date of contract acceptance.

### **5-1.086 PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS**

The DBEs listed by the Contractor in response to the provisions in Section 2-1.02B, "Submission of DBE Information," and Section 3, "Award and Execution of Contract," of these special provisions, which are determined by the Department to be certified DBEs, shall perform the work and supply the materials for which they are listed, unless the Contractor has received prior written authorization to perform the work with other forces or to obtain the materials from other sources.

Authorization to use other forces or sources of materials may be requested for the following reasons:

- A. The listed DBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general terms, conditions, plans and specifications for the project, or on the terms of such subcontractor's or supplier's written bid, is presented by the Contractor.
- B. The listed DBE becomes bankrupt or insolvent.
- C. The listed DBE fails or refuses to perform the subcontract or furnish the listed materials.
- D. The Contractor stipulated that a bond was a condition of executing a subcontract and the listed DBE subcontractor fails or refuses to meet the bond requirements of the Contractor.
- E. The work performed by the listed subcontractor is substantially unsatisfactory and is not in substantial conformance with the plans and specifications, or the subcontractor is substantially delaying or disrupting the progress of the work.
- F. It would be in the best interest of the State.

The Contractor shall not be entitled to any payment for such work or material unless it is performed or supplied by the listed DBE or by other forces (including those of the Contractor) pursuant to prior written authorization of the Engineer.

### **5-1.09 SUBCONTRACTING**

Attention is directed to the provisions in Section 8-1.01, "Subcontracting," of the Standard Specifications, and Section 2, "Proposal Requirements and Conditions," and Section 3, "Award and Execution of Contract," of these special provisions.

Pursuant to the provisions of Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at:

<http://www.dir.ca.gov/DLSE/Debar.html>.

The provisions in the third paragraph of Section 8-1.01, "Subcontracting," of the Standard Specifications, that the Contractor shall perform with the Contractor's own organization contract work amounting to not less than 50 percent of the original contract price, is not changed by the Federal Aid requirement specified under "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions that the Contractor perform not less than 30 percent of the original contract work with the Contractor's own organization.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions. This requirement shall be enforced as follows:

- A. Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

In conformance with the Federal DBE regulations Sections 26.53(f)(1) and 26.53(f)(2) Part 26, Title 49 CFR:

- A. The Contractor shall not terminate for convenience a DBE subcontractor listed in response to Section 2-1.02B, "Submission of DBE Information," and then perform that work with its own forces, or those of an affiliate without the written consent of the Department, and
- B. If a DBE subcontractor is terminated or fails to complete its work for any reason, the Contractor will be required to make good faith efforts to substitute another DBE subcontractor for the original DBE subcontractor, to the extent needed to meet the contract goal.

The requirement in Section 2-1.02, "Disadvantaged Business Enterprise (DBE)," of these special provisions that DBEs must be certified on the date bids are opened does not apply to DBE substitutions after award of the contract.

#### **5-1.10 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS**

Attention is directed to the provisions in Sections 10262 and 10262.5 of the Public Contract Code and Section 7108.5 of the Business and Professions Code concerning prompt payment to subcontractors.

#### **5-1.102 PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS**

The Contractor shall return all moneys withheld in retention from the subcontractor within 30 days after receiving payment for work satisfactorily completed, even if the other contract work is not completed and has not been accepted in conformance with Section 7-1.17, "Acceptance of Contract," of the Standard Specifications. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or noncompliance by a subcontractor.

#### **5-1.11 PARTNERING**

The State will promote the formation of a "Partnering" relationship with the Contractor in order to effectively complete the contract to the benefit of both parties. The purpose of this relationship is to maintain a cooperative communication and to mutually resolve conflicts at the lowest responsible management level.

The Contractor may request the formation of a "Partnering" relationship by submitting a request in writing to the Engineer after approval of the contract. If the Contractor's request for "Partnering" is approved by the Engineer, scheduling of a "Partnering Workshop," selecting the "Partnering" facilitator and workshop site, and other administrative details shall be as agreed to by both parties. If agreed to by the parties, additional "Partnering Workshops" will be conducted as needed throughout the life of the contract.

The costs involved in providing the "Partnering Workshop" facilitator and workshop site will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost in providing the "Partnering Workshop" facilitator and workshop site in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor one-half of that cost, except no markups will be allowed.

All other costs associated with "Partnering Workshops" will be borne separately by the party incurring the costs, such as wages and travel expenses, and no additional compensation will be allowed therefor.

The establishment of a "Partnering" relationship will not change or modify the terms and conditions of the contract and will not relieve either party of the legal requirements of the contract.

#### **5-1.114 VALUE ANALYSIS**

The Contractor may submit to the Engineer, in writing, a request for a "Value Analysis" workshop. The purpose for having a workshop is to identify value enhancing opportunities and to consider modifications to the plans and specifications that will reduce either the total cost, time of construction or traffic congestion, without impairing, in any manner, the essential functions or characteristics of the project including, but not limited to, service life, economy of operation, ease of maintenance, benefits to the travelling public, desired appearance, or design and safety standards.

To maximize the potential benefits of a workshop, the request should be submitted to the Engineer early in the project after approval of the contract. If the Contractor's request for a "Value Analysis" workshop is approved by the Engineer, scheduling of a workshop, selecting the facilitator and workshop site, and other administrative details shall be determined cooperatively by the Contractor and the Engineer.

The workshop shall be conducted in conformance with the methodology described in the Department's "Value Analysis Team Guide" available at the Department's web site at:

<http://www.dot.ca.gov/hq/oppd/value/>

The facilitator shall be a Certified Value Specialist (CVS) as recognized by the Society of American Value Engineers (SAVE) International, which may be contacted as follows:

SAVE International, 60 Revere Drive, Northbrook, IL 60062  
Telephone 1-847-480-1730, FAX 1-847-480-9282

The Contractor may submit recommendations resulting from a "Value Analysis" workshop for approval by the Engineer as cost reduction incentive proposals in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

The costs involved in providing the "Value Analysis" facilitator and workshop site will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost in providing the "Value Analysis" facilitator and workshop site in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor one-half of that cost, except no markups will be allowed.

All other costs associated with the "Value Analysis" workshop will be borne separately by the party incurring the costs, such as wages and travel expenses, and no additional compensation will be allowed therefor.

### **5-1.12 DISPUTE REVIEW BOARD**

To assist in the resolution of disputes or potential claims arising out of the work of this project, a Dispute Review Board, hereinafter referred to as the "DRB," shall be established by the Engineer and Contractor cooperatively upon approval of the contract. The DRB is intended to assist the contract administrative claims resolution process as specified in the provisions in Section 9-1.04, "Notice of Potential Claim," and Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The DRB shall not serve as a substitute for provisions in the specifications in regard to filing potential claims. The requirements and procedures established in this special provision shall be considered as an essential prerequisite to filing a claim, for arbitration or for litigation prior or subsequent to project completion.

The DRB shall be utilized when dispute or potential claim resolution at the project level is unsuccessful. The DRB shall function until the day of acceptance of the contract, at which time the work of the DRB will cease except for completion of unfinished dispute hearings and reports. After acceptance of the contract, disputes or potential claims that the Contractor wants to pursue that have not been settled, shall be stated or restated, by the Contractor, in response to the Proposed Final Estimate within the time limits provided in Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The State will review those claims in conformance with the provisions in Section 9-1.07B of the Standard Specifications. Following the completion of the State's administrative claims procedure, the Contractor may resort to arbitration in conformance with the provisions in Section 9-1.10, "Arbitration," of the Standard Specifications.

Disputes, as used in this section, shall include differences of opinion, properly noticed as provided hereinafter, between the State and Contractor on matters related to the work and other subjects considered by the State or Contractor, or by both, to be of concern to the DRB on this project, except matters relating to Contractor, subcontractor or supplier claims not actionable against the State as specified in these special provisions. Whenever the term "dispute" or "disputes" is used herein, it shall be deemed to include potential claims as well as disputes.

The DRB shall serve as an advisory body to assist in the resolution of disputes between the State and the Contractor, hereinafter referred to as the "parties." The DRB shall consider disputes referred to it, and furnish written reports containing findings and recommendations pertaining to those disputes, to the parties to aid in resolution of the differences between them. DRB findings and recommendations are not binding on the parties.

The DRB shall consist of one member selected by the State, one member selected by the Contractor, and a third member selected by the first 2 members and approved by both the State and the Contractor. The third member shall act as DRB Chairperson.

The first 2 DRB members shall select a third DRB member subject to mutual approval of the parties or may mutually concur on a list of potentially acceptable third DRB members and submit the list to the parties for final selection and approval of the third member. The goal in selection of the third member is to complement the professional experience of the first 2 members and to provide leadership for the DRB's activities.

No DRB member shall have prior direct involvement in this contract. No member shall have a financial interest in this contract or the parties thereto, within a period of 6 months prior to award of this contract or during the contract, except as follows:

- A. Compensation for services on this DRB.
- B. Ownership interest in a party or parties, documented by the prospective DRB member, that has been reviewed and determined in writing by the State to be sufficiently insignificant to render the prospective member acceptable to the State.

- C. Service as a member of other Dispute Review Boards on other contracts.
- D. Retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.
- E. The above provisions apply to parties having a financial interest in this contract, including but not limited to contractors, subcontractors, suppliers, consultants, and legal and business services.

DRB members shall be especially knowledgeable in the type of construction and contract documents potentially anticipated by the contract. The members shall discharge their responsibilities impartially and as an independent body considering the facts and circumstances related to the matters under consideration, applicable laws and regulations, and the pertinent provisions of the contract.

The State and the Contractor shall select their respective DRB members, in conformance with the terms and conditions of the Dispute Review Board Agreement and these special provisions, within 45 days of the approval of the contract. Each party shall provide written notification to the other of the name of their selected DRB member along with the prospective member's written disclosure statement.

Before their appointments are final, the first 2 prospective DRB members shall submit complete disclosure statements to both the State and the Contractor. The statement shall include a resume of the prospective member's experience, together with a declaration describing past, present, and anticipated or planned future relationships, including indirect relationships through the prospective member's primary or full-time employer, to this project and with the parties involved in this construction contract, including, but not limited to, relevant subcontractors or suppliers to the parties, the parties' principals or the parties' counsel. The DRB members shall also include a full disclosure of close professional or personal relationships with all key members of the parties to the contract. Either the Contractor or the State may object to the others nominee and that person will not be selected for the DRB. No reason need be given for the first objection. Objections to subsequent nominees must be based on a specific breach or violation of nominee responsibilities under this specification. A different person shall then be nominated within 14 Days. The third DRB member shall supply a full disclosure statement to the first 2 DRB members and to the parties prior to appointment. Either party may reject any of the 3 prospective DRB members who fail to fully comply with all required employment and financial disclosure conditions of DRB membership as described in the Dispute Review Board Agreement and herein. A copy of the Dispute Review Board Agreement is included in this special provision.

The first duty of the State and Contractor selected members of the DRB is to select and recommend prospective third member(s) to the parties for final selection and approval. The first 2 DRB members shall proceed with the selection of the third DRB member immediately upon receiving written notification from the State of their selection, and shall provide their recommendation simultaneously to the parties within 14 days of the notification.

An impasse shall be considered to have been reached if the parties are unable to approve a third member within 14 days of receipt of the recommendation of the first 2 DRB members, or if the first 2 members are unable to agree upon a recommendation within the 14 day time limit allowed in the preceding paragraph. In the event of an impasse in selection of the third DRB member, the State and the Contractor shall each propose 3 candidates for the third position. The parties shall select the candidates proposed under this paragraph from the current list of arbitrators certified by the Public Works Contract Arbitration Committee created by Article 7.2 (commencing with Section 10245) of the State Contract Act. The first 2 DRB members shall then select one of the 6 proposed candidates in a blind draw.

The Contractor, the State, and the 3 members of the DRB shall complete and adhere to the Dispute Review Board Agreement in administration of this DRB within 14 days of the parties' concurrence in the selection of the third member. The State authorizes the Engineer to execute and administer the terms of the Agreement. The person(s) designated by the Contractor as authorized to execute Contract Change Orders shall be authorized to execute and administer the terms of this agreement, or to delegate the authority in writing. The operation of the DRB shall be in conformance with the terms of the Dispute Review Board Agreement.

The State and the Contractor shall bear the costs and expenses of the DRB equally. Each DRB board member shall be compensated at an agreed rate of \$1,000 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB board member shall be compensated at an agreed rate of \$600 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB), has been specifically agreed to in advance by the State and Contractor. Time away from the project, that has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$100 per hour. The agreed amount of \$100 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The State will provide, at no cost to the Contractor, administrative services such as conference

facilities and secretarial services to the DRB. These special provisions and the Dispute Review Board Agreement state provisions for compensation and expenses of the DRB. DRB members shall be compensated at the same daily and hourly rate. The Contractor shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The State will reimburse the Contractor for its share of the costs. There will be no markups applied to expenses connected with the DRB, either by the DRB members or by the Contractor when requesting payment of the State's share of DRB expenses.

Service of a DRB member may be terminated at any time with not less than 14 days notice as follows:

- A. The State may terminate service of the State appointed member.
- B. The Contractor may terminate service of the Contractor appointed member.
- C. Upon the written recommendation of the State and Contractor members for the removal of the third member.
- D. Upon resignation of a member.

When a member of the DRB is replaced, the replacement member shall be appointed in the same manner as the replaced member was appointed. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement and shall be completed within 14 days. Changes in either of the DRB members chosen by the two parties will not require re-selection of the third member, unless both parties agree to such re-selection in writing. The Dispute Review Board Agreement shall be amended to reflect the change of a DRB member.

The following procedure shall be used for dispute resolution:

- A. If the Contractor objects to any decision, act or order of the Engineer, the Contractor shall give written notice of potential claim in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications, including provision of applicable cost documentation; or file written protests or notices in conformance with the provisions in the Standard Specifications and these special provisions.
- B. The Engineer will respond, in writing, to the Contractor's written protest or notice within 14 days of receipt of the written protest or notice.
- C. Within 14 days after receipt of the Engineer's written response, the Contractor shall, if the Contractor still objects, file a written reply with the Engineer, stating clearly and in detail the basis of the objection.
- D. Following the Contractor's objection to the Engineer's decision, the Contractor shall refer the dispute to the DRB if the Contractor wishes to further pursue the objection to the Engineer's decision. The Contractor shall make the referral in writing to the DRB, simultaneously copied to the State, within 21 days after receipt of the written reply from the Engineer. The written dispute referral shall describe the disputed matter in individual discrete segments so that it will be clear to both parties and the DRB what discrete elements of the dispute have been resolved, and which remain unresolved and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.
- E. The Contractor, by failing to submit the written notice of referral of the matter to the DRB, within 21 days after receipt of the State's written reply, waives future claims on the matter in contention.
- F. The Contractor and the State shall each be afforded an opportunity to be present and to be heard by the DRB, and to offer evidence. Either party furnishing written evidence or documentation to the DRB must furnish copies of such information to the other party a minimum of 14 days prior to the date the DRB is scheduled to convene the hearing for the dispute. Either party shall produce such additional evidence as the DRB may deem necessary to reach an understanding and determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRB. The DRB will not consider evidence not furnished in conformance with the terms specified herein.
- G. The DRB shall furnish a report, containing findings and recommendations as described in the Dispute Review Board Agreement, in writing to both the State and the Contractor. The DRB shall complete its reports, including minority opinion, if any, and submit them to the parties within 30 days of the DRB hearing, except that time extensions may be granted at the request of the DRB with the written concurrence of both parties. The report shall include the facts and circumstances related to the matters under consideration, applicable laws and regulations, the pertinent provisions of the Contract and the actual costs and time incurred as shown on the Contractor's cost accounting records. The DRB shall make recommendations on the merit of the dispute, and if appropriate, recommend guidelines for determining compensation.
- H. Within 30 days after receiving the DRB's report, both the State and the Contractor shall respond to the DRB in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRB's recommendation presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRB recommendation. Immediately after responses have been received by both parties, the DRB will provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRB's report from the DRB prior to responding to the report. The DRB will consider any clarification request only if submitted within 10 days of

receipt of the DRB's report, and if submitted simultaneously in writing to both the DRB and the other party. Each party may submit only one request for clarification for any individual DRB report. The DRB shall respond, in writing, to requests for clarification within 10 days of receipt of such requests.

- I. The DRB's recommendations, stated in the DRB's reports, are not binding on either party. Either party may seek a reconsideration of a recommendation of the DRB. The DRB shall only grant a reconsideration based upon submission of new evidence and if the request is submitted within the 30-day time limit specified for response to the DRB's written report. Each party may submit only one request for reconsideration regarding an individual DRB recommendation.
- J. If the State and the Contractor are able to resolve their dispute with the aid of the DRB's report, the State and Contractor shall promptly accept and implement the recommendations of the DRB. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.
- K. The State or the Contractor shall not call members who served on the DRB for this contract as witnesses in arbitration proceedings which may arise from this contract, and all documents created by the DRB shall be inadmissible as evidence in subsequent arbitration proceedings, except the DRB's final written reports on each issue brought before it.
- L. The State and Contractor shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.
- M. The DRB members shall have no claim against the State or the Contractor, or both, from claimed harm arising out of the parties' evaluations of the DRB's report.

#### **DISPUTES INVOLVING SUBCONTRACTOR CLAIMS**

For purposes of this section, a "subcontractor claim" shall include any claim by a subcontractor (including also any pass through claims by a lower tier subcontractor or supplier) against the Contractor that is actionable by the Contractor against the Department which arises from the work, services, or materials provided or to be provided in connection with the contract. If the Contractor determines to pursue a dispute against the Department that includes a subcontractor claim, the dispute shall be processed and resolved in conformance with these special provisions and in conformance with the following:

- A. The Contractor shall identify clearly in submissions pursuant to this section, that portion of the dispute that involves a subcontractor claim or claims.
- B. The Contractor shall include, as part of its submission pursuant to Step 4 above, a certification (False Claims Act Certification) by the subcontractor's or supplier's officer, partner, or authorized representative with authority to bind the subcontractor and with direct knowledge of the facts underlying the subcontractor claim. The Contractor shall submit a certification that the subcontractor claim is acknowledged and forwarded by the Contractor. The form for these certifications are available from the Engineer.
- C. At any DRB meeting on a dispute that includes one or more subcontractor claims, the Contractor shall require that each subcontractor that is involved in the dispute have present an authorized representative with actual knowledge of the facts underlying the subcontractor claim to assist in presenting the subcontractor claim and to answer questions raised by the DRB members or the Department's representatives.
- D. Failure by the Contractor to declare a subcontractor claim on behalf of its subcontractor (including lower tier subcontractors' and suppliers' pass through claims) at the time of submission of the Contractor's claims, as provided hereunder, shall constitute a release of the Department by the Contractor on account of such subcontractor claim.
- E. The Contractor shall include in all subcontracts under this contract that subcontractors and suppliers of any tier (a) agree to submit subcontractor claims to the Contractor in a proper form and in sufficient time to allow processing by the Contractor in conformance with the Dispute Review Board resolution specifications; (b) agree to be bound by the terms of the Dispute Review Board provisions to the extent applicable to subcontractor claims; (c) agree that, to the extent a subcontractor claim is involved, completion of all steps required under these Dispute Review Board special provisions shall be a condition precedent to pursuit by the subcontractor of other remedies permitted by law, including without limitation of a lawsuit against the Contractor; and (d) agree that the existence of a dispute resolution process for disputes involving subcontractor claims shall not be deemed to create any claim, right, or cause of action by any subcontractor or supplier against the Department.

Notwithstanding the foregoing, this Dispute Review Board special provision shall not apply to, and the DRB shall not have the authority to consider, subcontractor claims between the subcontractor(s) or supplier(s) and the Contractor that is not actionable by the Contractor against the Department.

A copy of the "Dispute Review Board Agreement" to be executed by the Contractor, State and the 3 DRB members after approval of the contract follows:

## DISPUTE REVIEW BOARD AGREEMENT

\_\_\_\_\_  
(Contract Identification)

Contract No. \_\_\_\_\_

**THIS DISPUTE REVIEW BOARD AGREEMENT, hereinafter called "AGREEMENT",** made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE," \_\_\_\_\_ hereinafter called the "CONTRACTOR," and the Dispute Review Board, hereinafter called the "DRB" consisting of the following members:

\_\_\_\_\_,  
(Contractor Appointee)

\_\_\_\_\_,  
(State Appointee)

and \_\_\_\_\_  
(Third Person)

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the special provisions for the above referenced contract provides for the establishment and operation of the DRB to assist in resolving disputes; and

WHEREAS, the DRB is composed of three members, one selected by the STATE, one selected by the CONTRACTOR, and the third member selected by the other two members and approved by the parties;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRB members hereto agree as follows:

### SECTION I DESCRIPTION OF WORK

To assist in the resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRB. The intent of the DRB is to fairly and impartially consider disputes placed before it and provide written recommendations for resolution of these disputes to both parties. The members of this DRB shall perform the services necessary to participate in the DRB's actions as designated in Section II, Scope of Work.

### SECTION II SCOPE OF WORK

The scope of work of the DRB includes, but is not limited to, the following:

#### A. OBJECTIVE

The principal objective of the DRB is to assist in the timely resolution of disputes between the parties arising from performance of this contract. It is not intended for either party to default on their normal responsibility to amicably and fairly settle their differences by indiscriminately assigning them to the DRB. It is intended that the mere existence of the DRB will encourage the parties to resolve disputes without resorting to this review procedure. But when a dispute which is serious enough to warrant the DRB's review does develop, the process for prompt and efficient action will be in place.

## **B. PROCEDURES**

The DRB shall render written reports on disputes between the parties arising from the construction contract. Prior to consideration of a dispute, the DRB shall establish rules and regulations that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. DRB recommendations, resulting from its consideration of a dispute, shall be furnished in writing to both parties. The recommendations shall be based on the pertinent contract provisions, and the facts and circumstances involved in the dispute. The recommendations shall find one responsible party in a dispute; shared or "jury" determinations shall not be rendered. The DRB shall make recommendations on the merit of the dispute, and if appropriate, recommend guidelines for determining compensation. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.

The DRB shall refrain from officially giving advice or consulting services to anyone involved in the contract. The individual members shall act in a completely independent manner and while serving as members of the DRB shall have no consulting business connections with either party or its principals or attorneys or other affiliates (subcontractors, suppliers, etc.) who have a beneficial interest in the contract.

During scheduled meetings of the DRB as well as during dispute hearings, DRB members shall refrain from expressing opinions on the merits of statements on matters under dispute or potential dispute. Opinions of DRB members expressed in private sessions shall be kept strictly confidential. Individual DRB members shall not meet with, or discuss contract issues with individual parties, except as directed by the DRB Chairperson. Such discussions or meetings shall be disclosed to both parties. Other discussions regarding the project between the DRB members and the parties shall be in the presence of all three members and both parties. Individual DRB members shall not undertake independent investigations of any kind pertaining to disputes or potential disputes, except with the knowledge of both parties and as expressly directed by the DRB Chairperson.

## **C. CONSTRUCTION SITE VISITS, PROGRESS MEETINGS AND FIELD INSPECTIONS**

The DRB members shall visit the project site and meet with representatives of the parties to keep abreast of construction activities and to develop familiarity with the work in progress. Scheduled progress meetings shall be held at or near the project site. The DRB shall meet at least once at the start of the project, and at least once every 6 months thereafter. The frequency, exact time, and duration of additional site visits and progress meetings shall be as recommended by the DRB and approved by the parties consistent with the construction activities or matters under consideration and dispute. Each meeting shall consist of a round table discussion and a field inspection of the work being performed on the contract, if necessary. Each meeting shall be attended by representatives of both parties. The agenda shall generally be as follows:

1. Meeting opened by the DRB Chairperson.
2. Remarks by the STATE's representative.
3. A description by the CONTRACTOR's representative of work accomplished since the last meeting; the current schedule status of the work; and a forecast for the coming period.
4. An outline by the CONTRACTOR's representative of potential problems and a description of proposed solutions.
5. An outline by the STATE's representative of the status of the work as the STATE views it.
6. A brief description by the CONTRACTOR's or STATE's representative of potential claims or disputes which have surfaced since the last meeting.
7. A summary by the STATE's representative, the CONTRACTOR's representative, or the DRB of the status of past disputes and claims.

The STATE's representative will prepare minutes of all regular meetings and circulate them for revision and approval by all concerned.

The field inspection shall cover all active segments of the work, the DRB being accompanied by both parties' representatives. The field inspection may be waived upon mutual agreement of the parties.

## **D. DRB CONSIDERATION AND HANDLING OF DISPUTES**

Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The DRB shall determine the time and location of DRB hearings, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of speedy resolution of issues. If the matter is not urgent, it may be scheduled for the time of the next scheduled DRB visit to the project. For an urgent matter, and upon the request of either party, the DRB shall meet at its earliest convenience.

Normally, hearings shall be conducted at or near the project site. However, any location which would be more convenient and still provide required facilities and access to necessary documentation shall be satisfactory.

Both parties shall be given the opportunity to present their evidence at these hearings. It is expressly understood that the DRB members are to act impartially and independently in the consideration of the contract provisions, and the facts and



conditions surrounding any dispute presented by either party, and that the recommendations concerning any such dispute are advisory and nonbinding on the parties.

The DRB may request that written documentation and arguments from both parties be sent to each DRB member, through the DRB Chairperson, for review before the hearing begins. A party furnishing written documentation to the DRB shall furnish copies of such information to the other party at the same time that such information is supplied to the DRB.

DRB hearings shall be informal. There shall be no testimony under oath or cross-examination. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRB in conformance with acceptance standards established by the DRB. These standards need not comply with prescribed legal laws of evidence.

The third DRB member shall act as Chairperson for dispute hearings and all other DRB activities. The parties shall have a representative at all hearings. Failure to attend a duly noticed meeting by either of the parties shall be conclusively considered by the DRB as indication that the non-attending party considers written submittals as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals until all aspects of the dispute are thoroughly covered. DRB members may ask questions, seek clarification, or request further data from either of the parties. The DRB may request from either party documents or information that would assist the DRB in making its findings and recommendations including, but not limited to, documents used by the CONTRACTOR in preparing the bid for the project. A refusal by a party to provide information requested by the DRB may be considered by the DRB as an indication that the requested material would tend to disprove that party's position. Claims shall not necessarily be computed by merely subtracting bid price from the total cost of the affected work. However, if claims are based on the "total cost method," then, to be considered by the DRB, they shall be supported by evidence furnished by the CONTRACTOR that (1) the nature of the dispute(s) makes it impossible or impracticable to determine costs with a reasonable degree of accuracy, (2) the CONTRACTOR's bid estimate was realistic, (3) the CONTRACTOR's actual costs were reasonable, and (4) the CONTRACTOR was not responsible for the added expenses. As to claims based on the CONTRACTOR's field or home office accounting records, those claims shall be supported by an audit report of an independent Certified Public Accountant unless the contract includes special provisions that provide for an alternative method to calculate unabsorbed home office overhead. Any of those claims shall also be subject to audit by the DRB with the concurrence of the parties. In large or complex cases, additional hearings may be necessary in order to consider all the evidence presented by both parties. All involved parties shall maintain the confidentiality of all documents and information, as provided in this AGREEMENT.

During dispute hearings, no DRB member shall express an opinion concerning the merit of any facet of the case. DRB deliberations shall be conducted in private, with interim individual views kept strictly confidential.

After hearings are concluded, the DRB shall meet in private and reach a conclusion supported by 2 or more members. Private sessions of the DRB may be held at a location other than the job site or by electronic conferencing as deemed appropriate, in order to expedite the process.

The DRB's findings and recommendations, along with discussion of reasons therefor, shall then be submitted as a written report to both parties. Recommendations shall be based on the pertinent contract provisions, applicable laws and regulations, and facts and circumstances related to the dispute. The report shall be thorough in discussing the facts considered, the contract language, law or regulation viewed by the DRB as pertinent to the issues, and the DRB's interpretation and philosophy in arriving at its conclusions and recommendations. The DRB's report shall stand on its own, without attachments or appendices. The DRB chairman shall complete and furnish a summary report to the DRB Program Manager, Construction Program, MS 44, P.O. Box 942874, Sacramento, CA 94274.

With prior written approval of both parties, the DRB may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties, shall be borne equally by the 2 parties as specified in an approved contract change order. The CONTRACTOR will not be entitled to markups for the payments made for these services.

The DRB shall resist submittal of incremental portions of information by either party, in the interest of making a fully-informed decision and recommendation.

The DRB shall make every effort to reach a unanimous decision. If this proves impossible, the dissenting member shall prepare a minority opinion, which shall be included in the DRB's report.

Although both parties should place weight upon the DRB's recommendations, they are not binding. Either party may appeal a recommendation to the DRB for reconsideration. However, reconsideration shall only be allowed when there is new evidence to present, and the DRB shall accept only one appeal from each party pertaining to an individual DRB recommendation. The DRB shall hear appeals in conformance with the terms described in the Section entitled "Dispute Review Board" in the special provisions.

#### **E. DRB MEMBER REPLACEMENT**

Should the need arise to appoint a replacement DRB member, the replacement DRB member shall be appointed in the same manner as the original DRB members were appointed. The selection of a replacement DRB member shall begin promptly upon notification of the necessity for a replacement and shall be completed within 14 days. This AGREEMENT will be amended to indicate change in DRB membership.

#### **SECTION III CONTRACTOR RESPONSIBILITIES**

The CONTRACTOR shall furnish to each DRB member one copy of pertinent documents which are or may become necessary for the DRB to perform their function. Pertinent documents are drawings or sketches, calculations, procedures, schedules, estimates, or other documents which are used in the performance of the work or in justifying or substantiating the CONTRACTOR's position. The CONTRACTOR shall also furnish a copy of such pertinent documents to the STATE, in conformance with the terms outlined in the special provisions.

#### **SECTION IV STATE RESPONSIBILITIES**

The STATE will furnish the following services and items:

##### **A. CONTRACT RELATED DOCUMENTS**

The STATE will furnish to each DRB member one copy of Notice to Contractors and Special Provisions, Proposal and Contract, Plans, Standard Specifications, and Standard Plans, change orders, written instructions issued by the STATE to the CONTRACTOR, or other documents pertinent to any dispute that has been referred to the DRB and necessary for the DRB to perform its function.

##### **B. COORDINATION AND SERVICES**

The STATE, through the Engineer, will, in cooperation with the CONTRACTOR, coordinate the operations of the DRB. The Engineer will arrange or provide conference facilities at or near the project site and provide secretarial and copying services to the DRB without charge to the CONTRACTOR.

#### **SECTION V TIME FOR BEGINNING AND COMPLETION**

Once established, the DRB shall be in operation until the day of acceptance of the contract. The DRB members shall not begin work under the terms of this AGREEMENT until authorized in writing by the STATE.

#### **SECTION VI PAYMENT**

##### **A. ALL INCLUSIVE RATE PAYMENT**

The STATE and the CONTRACTOR shall bear the costs and expenses of the DRB equally. Each DRB board member shall be compensated at an agreed rate of \$1,000 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB board member shall be compensated at an agreed rate of \$600 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time has been specifically agreed to in advance by the STATE and CONTRACTOR. Time away from the project, that has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$100 per hour. The agreed amount of \$100 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The STATE will provide, at no cost to the CONTRACTOR, administrative services such as conference facilities and secretarial services to the DRB.

##### **B. PAYMENTS**

DRB members shall be compensated at the same rate. The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The STATE will reimburse the CONTRACTOR for its share of the costs of the DRB.

The DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the STATE and CONTRACTOR.

Invoices shall be accompanied by original supporting documents, which the CONTRACTOR shall include with the extra work billing when submitting for reimbursement of the STATE's share of cost from the STATE. The CONTRACTOR will be reimbursed for one-half of approved costs of the DRB. No markups will be added to the CONTRACTOR's payment.

### **C. INSPECTION OF COSTS RECORDS**

The DRB members and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

### **SECTION VII ASSIGNMENT OF TASKS OF WORK**

The DRB members shall not assign the work of this AGREEMENT.

### **SECTION VIII TERMINATION OF AGREEMENT, THE DRB, AND DRB MEMBERS**

DRB members may resign from the DRB by providing not less than 14 days written notice of the resignation to the STATE and CONTRACTOR. DRB members may be terminated by their original appointing power, in conformance with the terms of the contract.

### **SECTION IX LEGAL RELATIONS**

The parties hereto mutually understand and agree that the DRB member in the performance of duties on the DRB, is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.

### **SECTION X CONFIDENTIALITY**

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRB, which documents and records are marked "Confidential - for use by the DRB only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRB findings and recommendations; that such documents and records will not be utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of the DRB. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRB. However, the parties understand that such documents shall be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

### **SECTION XI DISPUTES**

Disputes between the parties hereto, including disputes between the DRB members and either party or both parties, arising out of the work or other terms of this AGREEMENT, which cannot be resolved by negotiation and mutual concurrence between the parties, or through the administrative process provided in the contract, shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications.

### **SECTION XII VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION**

In the event that any party, including an individual member of the DRB, deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in conformance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

### **SECTION XIII FEDERAL REVIEW AND REQUIREMENTS**

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRB in progress, except for private meetings or deliberations of the DRB.

Other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

**SECTION XIV CERTIFICATION OF THE CONTRACTOR, THE DRB MEMBERS, AND THE STATE**

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRB MEMBER

DRB MEMBER

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title : \_\_\_\_\_

DRB MEMBER

By : \_\_\_\_\_

Title : \_\_\_\_\_

CONTRACTOR

CALIFORNIA STATE DEPARTMENT  
OF TRANSPORTATION

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

**5-1.13 AERIALY DEPOSITED LEAD**

Aerially deposited lead is present within the project limits. Aerially deposited lead is lead deposited within unpaved areas or formerly unpaved areas, primarily due to vehicle emissions.

Attention is directed to "Material Containing Aerially Deposited Lead" of these special provisions.

Portions of the Site Investigation Report are included in the "Material Information" handout. The complete report, entitled " Site Investigation Report Environmental Site Investigation Route 80 Vallejo, Solano County, California," is available for inspection at the Department of Transportation, Duty Senior's Desk, 111 Grand Avenue, Oakland California (510)-286-5209.

Aerially deposited lead is typically found within the top 0.6-m of material in unpaved areas within the highway right of way. Levels of lead found near the project limits range from less than 0.91 to 3,830 mg/kg total lead with an average concentration of 174 mg/kg total lead, as analyzed by EPA Test Method 6010 or EPA Test Method 7000 series.

The Department has received from the California Department of Toxic Substances Control (DTSC) a Variance regarding the use of material containing aerially deposited lead. This project is subject to the conditions of the Variance, as amended. The Variance is available for inspection at the Department of Transportation, District 4.

Once the Contractor has completed the placement of material containing aerially deposited lead in conformance with these special provisions and as directed by the Engineer, the Contractor shall have no responsibility for such materials in place. The Department will not consider the Contractor a generator of such contaminated materials. Further cleanup, removal or remedial actions for such materials will not be required if handled or disposed of as specified herein.

Excavation, reuse, and disposal of material with aerially deposited lead shall be in conformance with all rules and regulations including, but not limited to, those of the following agencies:

United States Department of Transportation (USDOT)  
United States Environmental Protection Agency (USEPA)  
California Environmental Protection Agency (Cal-EPA)  
California Department of Health Services  
Department of Toxic Substances Control (DTSC), Region 2  
California Division of Occupational Safety and Health Administration (Cal-OSHA)  
Integrated Waste Management Board  
Regional Water Quality Control Board (RWQCB), Region 2  
State Air Resources Control Board  
Bay Area Air Quality Management District (AQMD)

Materials containing hazardous levels of lead shall be transported and disposed of in conformance with Federal and State laws and regulations, as amended, and county and municipal ordinances and regulations, as amended. Laws and regulations that govern this work include, but are not limited to:

Health and Safety Code, Division 20, Chapter 6.5 (California Hazardous Waste Control Act)  
Title 22, California Code of Regulations, Division 4.5 (Environmental Health Standards for the Management of Hazardous Waste)  
Title 8, California Code of Regulations

#### 5-1.14 COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS

The provisions of this section shall apply only to the following contract items:

| ITEM CODE | ITEM  |
|-----------|---|
| 390206    | RUBBERIZED ASPHALT CONCRETE (TYPE G)                |
| 391031    | PAVING ASPHALT (BINDER-PAVEMENT REINFORCING FABRIC) |
| 390155    | ASPHALT CONCRETE (TYPE A)                           |
| 390165    | ASPHALT CONCRETE (OPEN GRADED)                      |
| 390145    | REPLACE ASPHALT CONCRETE SURFACING                  |

The compensation payable for asphalt concrete and paving asphalt (binder-pavement reinforcing fabric) will be increased or decreased in conformance with the provisions of this section for paving asphalt price fluctuations exceeding 5 percent ( $I_u/I_b$  is greater than 1.05 or less than 0.95) which occur during performance of the work.

The adjustment in compensation will be determined in conformance with the following formulae when the item of asphalt concrete or paving asphalt (binder-pavement reinforcing fabric) (or both) is included in a monthly estimate:

- A. Total monthly adjustment =  $AQ$
- B. For an increase in paving asphalt price index exceeding 5 percent:

$$A = 0.90 (1.1023) (I_u/I_b - 1.05) I_b$$

- C. For a decrease in paving asphalt price index exceeding 5 percent:

$$A = 0.90 (1.1023) (I_u/I_b - 0.95) I_b$$

- D. Where:

A = Adjustment in dollars per tonne of paving asphalt used to produce asphalt concrete and used as a binder for pavement reinforcing fabric rounded to the nearest \$0.01.

$I_u$  = The California Statewide Paving Asphalt Price Index which is in effect on the first business day of the month within the pay period in which the quantity subject to adjustment was included in the estimate.

$I_b$  = The California Statewide Paving Asphalt Price Index for the month in which the bid opening for the project occurred.

Q = Quantity in tonnes of paving asphalt that was used as a binder for pavement reinforcing fabric plus the quantity of paving asphalt that was used in producing the quantity of asphalt concrete shown under "This Estimate" on the monthly estimate using the amount of asphalt determined by the Engineer.

The adjustment in compensation will also be subject to the following:

- A. The compensation adjustments provided herein will be shown separately on payment estimates. The Contractor shall be liable to the State for decreased compensation adjustments and the Department may deduct the amount thereof from any moneys due or that may become due the Contractor.
- B. Compensation adjustments made under this section will be taken into account in making adjustments in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.
- C. The total price adjustment for price index increases of paving asphalt on this project shall not exceed \$2,300,000.

- D. In the event of an overrun of contract time, adjustment in compensation for paving asphalt included in estimates during the overrun period will be determined using the California Statewide Paving Asphalt Price Index in effect on the first business day of the month within the pay period in which the overrun began.

The California Statewide Paving Asphalt Price Index is determined each month on the first business day of the month by the Department using the median of posted prices in effect as posted by Chevron, Mobil, and Unocal for the Buena Vista, Huntington Beach, Kern River, Long Beach, Midway Sunset, and Wilmington fields.

In the event that the companies discontinue posting their prices for a field, the Department will determine an index from the remaining posted prices. The Department reserves the right to include in the index determination the posted prices of additional fields.

#### **5-1.15 AREAS FOR CONTRACTOR'S USE**

Attention is directed to the provisions in Section 7-1.19, "Rights in Land and Improvements," of the Standard Specifications and these special provisions.

The highway right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work.

No State-owned parcels adjacent to the right of way are available for the exclusive use of the Contractor within the contract limits. The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of equipment or materials, or for other purposes.

No area is available within the contract limits for the exclusive use of the Contractor. However, temporary storage of equipment and materials on State property may be arranged with the Engineer, subject to the prior demands of State maintenance forces and to other contract requirements. Use of the Contractor's work areas and other State-owned property shall be at the Contractor's own risk, and the State shall not be held liable for damage to or loss of materials or equipment located within such areas.

#### **5-1.16 PAYMENTS**

Attention is directed to Sections 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance," of the Standard Specifications and these special provisions.

For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications, the amount set forth for the contract items of work hereinafter listed shall be deemed to be the maximum value of the contract item of work which will be recognized for progress payment purposes:

- |   |          |
|---|----------|
| A. Clearing and Grubbing                    | \$9,000  |
| B. Progress Schedule (Critical Path Method) | \$12,000 |

After acceptance of the contract pursuant to the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount, if any, payable for a contract item of work in excess of the maximum value for progress payment purposes hereinabove listed for the item, will be included for payment in the first estimate made after acceptance of the contract.

In determining the partial payments to be made to the Contractor, only the following listed materials will be considered for inclusion in the payment as materials furnished but not incorporated in the work:

- A. pavement reinforcing fabric
- B. bar reinforcing steel
- C. reinforced concrete pipe
- D. miscellaneous iron and steel
- E. metal beam guard railing
- F. crash cushion
- G. pavement markers.

#### **5-1.17 SOUND CONTROL REQUIREMENTS**

Sound control shall conform to the provisions in Section 7-1.01I, "Sound Control Requirements," of the Standard Specifications and these special provisions.

The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dbA at a distance of 15 m. This requirement shall not relieve the Contractor from responsibility for complying with local ordinances regulating noise level.

The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

#### **5-1.18 FORCE ACCOUNT PAYMENT**

The second, third and fourth paragraphs of Section 9-1.03A, "Work Performed by Contractor," in the Standard Specifications, shall not apply.

Attention is directed to "Overhead" of these special provisions.

To the total of the direct costs for work performed on a force account basis, computed as provided in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," of the Standard Specifications, there will be added the following markups:

| Cost             | Percent Markup |
|------------------|----------------|
| Labor            | 28             |
| Materials        | 10             |
| Equipment Rental | 10             |

The above markups shall be applied to all work performed on a force account basis, regardless of whether the work revises the current contract completion date.

The above markups, together with payments made for time-related overhead pursuant to "Overhead" of these special provisions, shall constitute full compensation for all overhead costs for work performed on a force account basis. These overhead costs shall be deemed to include all items of expense not specifically designated as cost or equipment rental in conformance with the provisions in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," of the Standard Specifications. The total payment made as provided above and in the first paragraph of Section 9-1.03A, "Work Performed by Contractor," of the Standard Specifications shall be deemed to be the actual cost of the work performed on a force account basis, and shall constitute full compensation therefor. Full compensation for all overhead costs for work performed on a force account basis, and for which no adjustment is made to the quantity of time-related overhead pursuant to "Overhead" of these special provisions, shall be considered as included in the markups specified above, and no additional compensation will be allowed therefor.

When extra work to be paid for on a force account basis is performed by a subcontractor, approved in conformance with the provisions in Section 8-1.01, "Subcontracting," of the Standard Specifications, an additional markup of 7 percent will be added to the total cost of that extra work including all markups specified in this section "Force Account Payment". The additional 7 percent markup shall reimburse the Contractor for additional administrative costs, and no other additional payment will be made by reason of performance of the extra work by a subcontractor.

#### **SECTION 6. (BLANK)**

#### **SECTION 7. (BLANK)**

#### **SECTION 8. MATERIALS**

#### **SECTION 8-1. MISCELLANEOUS**

##### **8-1.01 SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS**

Only materials and products conforming to the requirements of the specifications shall be incorporated in the work. When metric materials and products are not available, and when approved by the Engineer, and at no cost to the State, materials and products in the United States Standard Measures which are of equal quality and of the required properties and characteristics for the purpose intended, may be substituted for the equivalent metric materials and products, subject to the following provisions:

- A. Materials and products shown on the plans or in the special provisions as being equivalent may be substituted for the metric materials and products specified or detailed on the plans.

- B. Before other non-metric materials and products will be considered for use, the Contractor shall furnish, at the Contractor's expense, evidence satisfactory to the Engineer that the materials and products proposed for use are equal to or better than the materials and products specified or detailed on the plans. The burden of proof as to the quality and suitability of substitutions shall be upon the Contractor and the Contractor shall furnish necessary information as required by the Engineer. The Engineer will be the sole judge as to the quality and suitability of the substituted materials and products and the Engineer's decision will be final.
- C. When the Contractor elects to substitute non-metric materials and products, including materials and products shown on the plans or in the special provisions as being equivalent, the list of sources of material specified in Section 6-1.01, "Source of Supply and Quality of Materials," of the Standard Specification shall include a list of substitutions to be made and contract items involved. In addition, for a change in design or details, the Contractor shall submit plans and working drawings in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The plans and working drawings shall be submitted at least 7 days before the Contractor intends to begin the work involved.

Unless otherwise specified, the following substitutions of materials and products will be allowed:

#### SUBSTITUTION TABLE FOR SIZES OF HIGH STRENGTH STEEL FASTENERS

ASTM Designation: A 325M

| METRIC SIZE SHOWN ON THE PLANS<br>mm x thread pitch | SIZE TO BE SUBSTITUTED<br>inch |
|---|--------------------------------|
| M16 x 2   | 5/8                            |
| M20 x 2.5   | 3/4                            |
| M22 x 2.5   | 7/8                            |
| M24 x 3   | 1                              |
| M27 x 3   | 1-1/8                          |
| M30 x 3.5   | 1-1/4                          |
| M36 x 4   | 1-1/2                          |

#### SUBSTITUTION TABLE FOR PLAIN WIRE REINFORCEMENT

ASTM Designation: A 82

| METRIC SIZE SHOWN ON THE PLANS<br><sup>2</sup><br>mm | SIZE TO BE SUBSTITUTED<br><sup>2</sup><br>inch x 100 |
|--|--|
| MW9  | W1.4   |
| MW10   | W1.6   |
| MW13   | W2.0   |
| MW15   | W2.3   |
| MW19   | W2.9   |
| MW20   | W3.1   |
| MW22   | W3.5   |
| MW25   | W3.9, except W3.5 in piles only                      |
| MW26   | W4.0   |
| MW30   | W4.7   |
| MW32   | W5.0   |
| MW35   | W5.4   |
| MW40   | W6.2   |
| MW45   | W6.5   |
| MW50   | W7.8   |
| MW55   | W8.5, except W8.0 in piles only                      |
| MW60   | W9.3   |
| MW70   | W10.9, except W11.0 in piles only                    |
| MW80   | W12.4  |
| MW90   | W14.0  |
| MW100  | W15.5  |



**SUBSTITUTION TABLE FOR BAR REINFORCEMENT**

| <b>METRIC BAR DESIGNATION<br/>NUMBER<sup>1</sup> SHOWN ON THE PLANS</b> | <b>BAR DESIGNATION<br/>NUMBER<sup>2</sup> TO BE SUBSTITUTED</b> |
|---|---|
| 10  | 3   |
| 13  | 4   |
| 16  | 5   |
| 19  | 6   |
| 22  | 7   |
| 25  | 8   |
| 29  | 9   |
| 32  | 10  |
| 36  | 11  |
| 43  | 14  |
| 57  | 18  |

<sup>1</sup>Bar designation numbers approximate the number of millimeters of the nominal diameter of the bars.

<sup>2</sup>Bar numbers are based on the number of eighths of an inch included in the nominal diameter of the bars.

No adjustment will be required in spacing or total number of reinforcing bars due to a difference in minimum yield strength between metric and non-metric bars.

**SUBSTITUTION TABLE FOR SIZES OF:**

(1) STEEL FASTENERS FOR GENERAL APPLICATIONS (ASTM Designation: A 307 or AASHTO Designation: M 314, Grade 36 or 55), and

(2) HIGH STRENGTH STEEL FASTENERS (ASTM Designation: A 325 or A 449)

| <b>METRIC SIZE SHOWN ON THE PLANS<br/>mm</b> | <b>SIZE TO BE SUBSTITUTED<br/>inch</b> |
|--|--|
| 6 or 6.35                                    | 1/4                                    |
| 8 or 7.94                                    | 5/16                                   |
| 10 or 9.52                                   | 3/8                                    |
| 11 or 11.11                                  | 7/16                                   |
| 13 or 12.70                                  | 1/2                                    |
| 14 or 14.29                                  | 9/16                                   |
| 16 or 15.88                                  | 5/8                                    |
| 19 or 19.05                                  | 3/4                                    |
| 22 or 22.22                                  | 7/8                                    |
| 24, 25, or 25.40                             | 1                                      |
| 29 or 28.58                                  | 1-1/8                                  |
| 32 or 31.75                                  | 1-1/4                                  |
| 35 or 34.93                                  | 1-3/8                                  |
| 38 or 38.10                                  | 1-1/2                                  |
| 44 or 44.45                                  | 1-3/4                                  |
| 51 or 50.80                                  | 2                                      |
| 57 or 57.15                                  | 2-1/4                                  |
| 64 or 63.50                                  | 2-1/2                                  |
| 70 or 69.85                                  | 2-3/4                                  |
| 76 or 76.20                                  | 3                                      |
| 83 or 82.55                                  | 3-1/4                                  |
| 89 or 88.90                                  | 3-1/2                                  |
| 95 or 95.25                                  | 3-3/4                                  |
| 102 or 101.60                                | 4                                      |

**SUBSTITUTION TABLE FOR NOMINAL THICKNESS OF SHEET METAL**

| UNCOATED HOT AND COLD ROLLED SHEETS          |                                   | HOT-DIPPED ZINC COATED SHEETS<br>(GALVANIZED) |                                   |
|--|-----------------------------------|---|-----------------------------------|
| METRIC THICKNESS<br>SHOWN ON THE PLANS<br>mm | GAGE TO BE<br>SUBSTITUTED<br>inch | METRIC THICKNESS<br>SHOWN ON THE PLANS<br>mm  | GAGE TO BE<br>SUBSTITUTED<br>inch |
| 7.94   | 0.3125                            | 4.270   | 0.1681                            |
| 6.07   | 0.2391                            | 3.891   | 0.1532                            |
| 5.69   | 0.2242                            | 3.510   | 0.1382                            |
| 5.31   | 0.2092                            | 3.132   | 0.1233                            |
| 4.94   | 0.1943                            | 2.753   | 0.1084                            |
| 4.55   | 0.1793                            | 2.372   | 0.0934                            |
| 4.18   | 0.1644                            | 1.994   | 0.0785                            |
| 3.80   | 0.1495                            | 1.803   | 0.0710                            |
| 3.42   | 0.1345                            | 1.613   | 0.0635                            |
| 3.04   | 0.1196                            | 1.461   | 0.0575                            |
| 2.66   | 0.1046                            | 1.311   | 0.0516                            |
| 2.28   | 0.0897                            | 1.158   | 0.0456                            |
| 1.90   | 0.0747                            | 1.006 or 1.016                                | 0.0396                            |
| 1.71   | 0.0673                            | 0.930   | 0.0366                            |
| 1.52   | 0.0598                            | 0.853   | 0.0336                            |
| 1.37   | 0.0538                            | 0.777   | 0.0306                            |
| 1.21   | 0.0478                            | 0.701   | 0.0276                            |
| 1.06   | 0.0418                            | 0.627   | 0.0247                            |
| 0.91   | 0.0359                            | 0.551   | 0.0217                            |
| 0.84   | 0.0329                            | 0.513   | 0.0202                            |
| 0.76   | 0.0299                            | 0.475   | 0.0187                            |
| 0.68   | 0.0269                            | -----   | -----                             |
| 0.61   | 0.0239                            | -----   | -----                             |
| 0.53   | 0.0209                            | -----   | -----                             |
| 0.45   | 0.0179                            | -----   | -----                             |
| 0.42   | 0.0164                            | -----   | -----                             |
| 0.38   | 0.0149                            | -----   | -----                             |

**SUBSTITUTION TABLE FOR WIRE**

| METRIC THICKNESS<br>SHOWN ON THE PLANS<br>mm | WIRE THICKNESS<br>TO BE SUBSTITUTED<br>inch | GAGE NO. |
|--|---|----------|
| 6.20   | 0.244                                       | 3        |
| 5.72   | 0.225                                       | 4        |
| 5.26   | 0.207                                       | 5        |
| 4.88   | 0.192                                       | 6        |
| 4.50   | 0.177                                       | 7        |
| 4.11   | 0.162                                       | 8        |
| 3.76   | 0.148                                       | 9        |
| 3.43   | 0.135                                       | 10       |
| 3.05   | 0.120                                       | 11       |
| 2.69   | 0.106                                       | 12       |
| 2.34   | 0.092                                       | 13       |
| 2.03   | 0.080                                       | 14       |
| 1.83   | 0.072                                       | 15       |
| 1.57   | 0.062                                       | 16       |
| 1.37   | 0.054                                       | 17       |
| 1.22   | 0.048                                       | 18       |
| 1.04   | 0.041                                       | 19       |
| 0.89   | 0.035                                       | 20       |

**SUBSTITUTION TABLE FOR PIPE PILES**

| METRIC SIZE<br>SHOWN ON THE PLANS<br>mm x mm | SIZE<br>TO BE SUBSTITUTED<br>inch x inch |
|--|--|
| PP 360 x 4.55                                | NPS 14 x 0.179                           |
| PP 360 x 6.35                                | NPS 14 x 0.250                           |
| PP 360 x 9.53                                | NPS 14 x 0.375                           |
| PP 360 x 11.12                               | NPS 14 x 0.438                           |
| PP 406 x 12.70                               | NPS 16 x 0.500                           |
| PP 460 x T                                   | NPS 18 x T"                              |
| PP 508 x T                                   | NPS 20 x T"                              |
| PP 559 x T                                   | NPS 22 x T"                              |
| PP 610 x T                                   | NPS 24 x T"                              |
| PP 660 x T                                   | NPS 26 x T"                              |
| PP 711 x T                                   | NPS 28 x T"                              |
| PP 762 x T                                   | NPS 30 x T"                              |
| PP 813 x T                                   | NPS 32 x T"                              |
| PP 864 x T                                   | NPS 34 x T"                              |
| PP 914 x T                                   | NPS 36 x T"                              |
| PP 965 x T                                   | NPS 38 x T"                              |
| PP 1016 x T                                  | NPS 40 x T"                              |
| PP 1067 x T                                  | NPS 42 x T"                              |
| PP 1118 x T                                  | NPS 44 x T"                              |
| PP 1219 x T                                  | NPS 48 x T"                              |
| PP 1524 x T                                  | NPS 60 x T"                              |

The thickness in millimeters (T) represents an exact conversion of the thickness in inches (T").

**SUBSTITUTION TABLE FOR STRUCTURAL TIMBER AND LUMBER**

| <b>METRIC MINIMUM<br/>DRESSED DRY,<br/>SHOWN ON THE PLANS<br/>mm x mm</b> | <b>METRIC MINIMUM<br/>DRESSED GREEN,<br/>SHOWN ON THE PLANS<br/>mm x mm</b> | <b>NOMINAL<br/>SIZE<br/>TO BE SUBSTITUTED<br/>inch x inch</b> |
|---|---|---|
| 19x89   | 20x90   | 1x4   |
| 38x89   | 40x90   | 2x4   |
| 64x89   | 65x90   | 3x4   |
| 89x89   | 90x90   | 4x4   |
| 140x140   | 143x143   | 6x6   |
| 140x184   | 143x190   | 6x8   |
| 184x184   | 190x190   | 8x8   |
| 235x235   | 241x241   | 10x10   |
| 286x286   | 292x292   | 12x12   |

**SUBSTITUTION TABLE FOR NAILS AND SPIKES**

| <b>METRIC COMMON NAIL,<br/>SHOWN ON THE PLANS<br/><br/>Length, mm<br/>Diameter, mm</b> | <b>METRIC BOX NAIL,<br/>SHOWN ON THE PLANS<br/><br/>Length, mm<br/>Diameter, mm</b> | <b>METRIC SPIKE,<br/>SHOWN ON THE<br/>PLANS<br/>Length, mm<br/>Diameter, mm</b> | <b>SIZE<br/>TO BE<br/>SUBSTITUTED<br/>Penny-weight</b> |
|--|---|---|--|
| 50.80<br>2.87  | 50.80<br>2.51   | ————  | 6d   |
| 63.50<br>3.33  | 63.50<br>2.87   | ————  | 8d   |
| 76.20<br>3.76  | 76.20<br>3.25   | 76.20<br>4.88   | 10d  |
| 82.55<br>3.76  | 82.55<br>3.25   | 82.55<br>4.88   | 12d  |
| 88.90<br>4.11  | 88.90<br>3.43   | 88.90<br>5.26   | 16d  |
| 101.60<br>4.88   | 101.60<br>3.76  | 101.60<br>5.72  | 20d  |
| 114.30<br>5.26   | 114.30<br>3.76  | 114.30<br>6.20  | 30d  |
| 127.00<br>5.72   | 127.00<br>4.11  | 127.00<br>6.68  | 40d  |
| ————   | ————  | 139.70<br>7.19  | 50d  |
| ————   | ————  | 152.40<br>7.19  | 60d  |

**SUBSTITUTION TABLE FOR IRRIGATION  
COMPONENTS**

| METRIC<br>WATER METERS, TRUCK<br>LOADING STANDPIPES,<br>VALVES, BACKFLOW<br>PREVENTERS, FLOW<br>SENSORS, WYE<br>STRAINERS, FILTER<br>ASSEMBLY UNITS, PIPE<br>SUPPLY LINES, AND PIPE<br>IRRIGATION SUPPLY<br>LINES<br>SHOWN ON THE PLANS<br>DIAMETER NOMINAL (DN)<br>mm | NOMINAL<br>SIZE<br>TO BE SUBSTITUTED<br><br>inch |
|--|--|
| 15   | 1/2  |
| 20   | 3/4  |
| 25   | 1  |
| 32   | 1-1/4  |
| 40   | 1-1/2  |
| 50   | 2  |
| 65   | 2-1/2  |
| 75   | 3  |
| 100  | 4  |
| 150  | 6  |
| 200  | 8  |
| 250  | 10   |
| 300  | 12   |
| 350  | 14   |
| 400  | 16   |

Unless otherwise specified, substitutions of United States Standard Measures standard structural shapes corresponding to the metric designations shown on the plans and in conformance with the requirements in ASTM Designation: A 6/A 6M, Annex 2, will be allowed.

**8-1.02 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS**

The Department maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied.

For those categories of materials included in the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included in the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

## **PAVEMENT MARKERS, PERMANENT TYPE**

### **Retroreflective**

- A. Apex, Model 921 (100 mm x 100 mm)
- B. Ray-O-Lite, Models SS (100 mm x 100 mm), RS (100 mm x 100 mm) and AA (100 mm x 100 mm)
- C. Stimsonite, Models 88 (100 mm x 100 mm), 911 (100 mm x 100 mm), 953 (70 mm x 114 mm)
- D. 3M Series 290 (89 mm x 100 mm)

### **Retroreflective With Abrasion Resistant Surface (ARS)**

- A. Apex, Model 921AR (100 mm x 100 mm)
- B. Ray-O-Lite "AA" ARS (100 mm x 100 mm)
- C. Stimsonite, Models 911 (100 mm x 100 mm), 953 (70 mm x 114 mm)
- D. 3M Series 290 (89 mm x 100 mm)

### **Retroreflective With Abrasion Resistant Surface (ARS)**

(Used for recessed applications)

- A. Stimsonite, Model 948 (58 mm x 119 mm)
  - B. Ray-O-Lite, Model 2002 (58 mm x 117 mm)
  - C. Stimsonite, Model 944SB (51 mm x 100 mm)\*
  - D. Ray-O-Lite, Model 2004 ARS (51 mm x 100 mm)\*
- \*For use only in 114 mm wide (older) recessed slots

### **Non-Reflective For Use With Epoxy Adhesive, 100 mm Round**

- A. Apex Universal (Ceramic)
- B. Highway Ceramics, Inc. (Ceramic)

### **Non-Reflective For Use With Bitumen Adhesive, 100 mm Round**

- A. Alpine Products, "D-Dot" and "ANR" (ABS)
- B. Apex Universal (Ceramic)
- C. Apex Universal, Model 929 (ABS)
- D. Elgin Molded Plastics, "Empco-Lite" Model 900 (ABS)
- E. Highway Ceramics, Inc. (Ceramic)
- F. Hi-Way Safety, Inc., Models P20-2000W and 2001Y (ABS)
- G. Interstate Sales, "Diamond Back" (ABS) and (Polypropylene)
- H. Novabrite Models Adot-w (White) Adot-y (Yellow), (ABS)
- I. Road Creations, Model RCB4NR (Acrylic)
- J. Zumar Industries, "Titan TM40A" (ABS)

## **PAVEMENT MARKERS, TEMPORARY TYPE**

### **Temporary Markers For Long Term Day/Night Use (6 months or less)**

- A. Apex Universal, Model 924 (100 mm x 100 mm)
- B. Elgin Molded Plastics, "Empco-Lite" Model 901 (100 mm x 100 mm)
- C. Road Creations, Model R41C (100 mm x 100 mm)
- D. Vega Molded Products "Temporary Road Marker" (75 mm x 100 mm)

### **Temporary Markers For Short Term Day/Night Use (14 days or less)**

(For seal coat or chip seal applications, clear protective covers are required)

- A. Apex Universal, Model 932
- B. Davidson Plastics, Models T.O.M., T.R.P.M., and "HH" (High Heat)
- C. Hi-Way Safety, Inc., Model 1280/1281

## **STRIPING AND PAVEMENT MARKING MATERIAL**

### **Permanent Traffic Striping and Pavement Marking Tape**

- A. Advanced Traffic Marking, Series 300 and 400
- B. Brite-Line, Series 1000
- C. Brite-Line "DeltaLine XRP"

- D. Swarco Industries, "Director 35" (For transverse application only)
- E. Swarco Industries, "Director 60"
- F. 3M, "Stamark" Series 380 and 5730
- G. 3M, "Stamark" Series 420 (For transverse application only)

**Temporary (Removable) Striping and Pavement Marking Tape (6 months or less)**

- A. Advanced Traffic Marking, Series 200
- B. Brite-Line, Series 100
- C. P.B. Laminations, Aztec, Grade 102
- D. Swarco Industries, "Director-2"
- E. 3M, "Stamark," Series 620
- F. 3M Series A145 Removable Black Line Mask  
(Black Tape: For use only on Asphalt Concrete Surfaces)
- G. Advanced Traffic Marking Black "Hide-A-Line"  
(Black Tape: For use only on Asphalt Concrete Surfaces)
- H. Brite-Line "BTR" Black Removable Tape  
(Black Tape: For use only on Asphalt Concrete Surfaces)

**Preformed Thermoplastic (Heated in place)**

- A. Flint Trading, "Premark" and "Premark 20/20 Flex"
- B. Pavemark, "Hotape"

**Removable Traffic Paint**

- A. Belpro, Series 250/252 and No. 93 Remover

**Ceramic Surfacing Laminate, 150 mm x 150 mm**

- A. Safeline Industries/Highway Ceramics, Inc.

**CLASS 1 DELINEATORS**

**One Piece Driveable Flexible Type, 1700 mm**

- A. Carsonite, Curve-Flex CFRM-400
- B. Carsonite, Roadmarker CRM-375
- C. Davidson Plastics, "Flexi-Guide Models 400 and 566"
- D. FlexStake, Model 654 TM
- E. GreenLine Models HWD1-66 and CGD1-66
- F. J. Miller Industries, Model JMI-375 (with soil anchor)

**Special Use Flexible Type, 1700 mm**

- A. Carsonite, "Survivor" (with 450 mm U-Channel base)
- B. FlexStake, Model 604
- C. GreenLine Models HWD and CGD (with 450 mm U-Channel base)
- D. Safe-Hit with 200 mm pavement anchor (SH248-GP1)
- E. Safe-Hit with 380 mm soil anchor (SH248-GP2) and with 450 mm soil anchor (SH248-GP3)

**Surface Mount Flexible Type, 1200 mm**

- A. Bent Manufacturing Company, Masterflex Model MF-180EX-48
- B. Carsonite, "Super Duck II"
- C. FlexStake, Surface Mount, Models 704 and 754 TM

**CHANNELIZERS**

**Surface Mount Type, 900 mm**

- A. Bent Manufacturing Company, Masterflex Models MF-360-36 (Round) and MF-180-36 (Flat)
- B. Carsonite, "Super Duck" (Flat SDF-436, Round SDR-336)
- C. Carsonite, "Super Duck II" Model SDCF203601MB "The Channelizer"
- D. Davidson Plastics, Flex-Guide Models FG300LD and FG300UR
- E. FlexStake, Surface Mount, Models 703 and 753 TM

- F. GreenLine, Model SMD-36
- G. Hi-Way Safety, Inc. "Channel Guide Channelizer" Model CGC36
- H. The Line Connection, "Dura-Post" Model DP36-3 (Permanent)
- I. The Line Connection, "Dura-Post" Model DP36-3C (Temporary)
- J. Repo, Models 300 and 400
- K. Safe-Hit, Guide Post, Model SH236SMA

#### **CONICAL DELINEATORS, 1070 mm**

(For 700 mm Traffic Cones, see Standard Specifications)

- A. Bent Manufacturing Company "T-Top"
- B. Plastic Safety Systems "Navigator-42"
- C. Roadmaker Company "Stacker"
- D. Traffix Devices "Grabber"

#### **OBJECT MARKERS**

##### **Type "K", 450 mm**

- A. Carsonite, Model SMD-615
- B. FlexStake, Model 701 KM
- C. Repo, Models 300 and 400
- D. Safe-Hit, Model SH718SMA
- E. The Line Connection, Model DP21-4K

##### **Type "K-4" / "Q" Object Markers, 600 mm**

- A. Bent Manufacturing "Masterflex" Model MF-360-24
- B. Carsonite, Super Duck II
- C. FlexStake, Model 701KM
- D. Repo, Models 300 and 400
- E. Safe-Hit, Models SH8 24SMA\_WA and SH8 24GP3\_WA
- F. The Line Connection, Model DP21-4Q

#### **TEMPORARY RAILING (TYPE K) REFLECTORS AND CONCRETE BARRIER MARKERS**

##### **Impactable Type**

- A. ARTUK, "FB"
- B. Davidson Plastics, Model PCBM-12
- C. Duraflex Corp., "Flexx 2020" and "Electriflexx"
- D. Hi-Way Safety, Inc., Model GMKRM100

##### **Non-Impactable Type**

- A. ARTUK, JD Series
- B. Stimsonite, Model 967 (with 83 mm Acrylic cube corner reflector)
- C. Stimsonite, Model 967LS
- D. Vega Molded Products, Models GBM and JD

#### **THREE BEAM BARRIER MARKERS**

(For use to the left of traffic)

- A. Duraflex Corp., "Railrider"
- B. Davidson Plastics, "Mini" (75 mm x 254 mm)

#### **CONCRETE BARRIER DELINEATORS, 400 mm**

(For use to the right of traffic. When mounted on top of barrier, places top of reflective element at 1200 mm)

- A. Davidson Plastics, Model PCBM T-16
- B. Safe-Hit, Model SH216RBM
- C. Sun-Lab Technology, "Safety Guide Light, Model TM," 130 mm x 130 mm x 80 mm

#### **CONCRETE BARRIER-MOUNTED MINI-DRUM (260 mm x 360 mm x 570 mm)**

- A. Stinson Equipment Company "SaddleMarker"



## **SOUND WALL DELINEATOR**

(Applied vertically. Place top of 75 mm x 300 mm reflective element at 1200 mm above roadway)

- A. Davidson Plastics, PCBM S-36
- B. Sun-Lab Technology, "Safety Guide Light, Model SM12," 130 mm x 130 mm x 80 mm

## **GUARD RAILING DELINEATOR**

(Top of reflective element at 1200 mm above plane of roadway)

### **Wood Post Type, 686 mm**

- A. Carsonite, Model 427
- B. Davidson Plastics FG 427 and FG 527
- C. FlexStake, Model 102 GR
- D. GreenLine GRD 27
- E. J.Miller Model JMI-375G
- F. Safe-Hit, Model SH227GRD

### **Steel Post Type**

- A. Carsonite, Model CFGR-327 with CFGRBK300 Mounting Bracket

## **RETROREFLECTIVE SHEETING**

### **Channelizers, Barrier Markers, and Delineators**

- A. 3M, High Intensity
- B. Reflexite, PC-1000 Metalized Polycarbonate
- C. Reflexite, AC-1000 Acrylic
- D. Reflexite, AP-1000 Metalized Polyester
- E. Reflexite, AR-1000 Abrasion Resistant Coating
- F. Avery Dennison T-6500 Series (Formerly Stimsonite, Series 6200) (For rigid substrate devices only)

### **Traffic Cones, 330 mm Sleeves**

- A. Reflexite SB (Polyester), Vinyl or "TR" (Semi-transparent)

### **Traffic Cones, 100 mm and 150 mm Sleeves**

- A. 3M Series 3840
- B. Reflexite Vinyl, "TR" (Semi-transparent) or "Conformalite"

### **Barrels and Drums**

- A. Reflexite, "Super High Intensity" or "High Impact Drum Sheeting"
- B. 3M Series 3810

### **Barricades: Type I, Engineer Grade**

- A. American Decal, Adcolite
- B. Avery Dennison, T-1500 and T-1600
- C. 3M, Scotchlite, Series CW

### **Barricades: Type II, Super Engineer Grade**

- A. Avery Dennison, T-2500 Series
- B. Kiwalite Type II
- C. Nikkalite 1800 Series

### **Signs: Type II, Super Engineer Grade**

- A. Avery Dennison, T-2500 Series
- B. Kiwalite, Type II
- C. Nikkalite 1800 Series

### **Signs: Type III, High-Intensity Grade**

- A. 3M Series 3800
- B. Nippon Carbide, Nikkalite Brand Ultralite Grade II

**Signs: Type IV, High-Intensity Prismatic Grade**

- A. Avery Dennison T-6500 (Formerly Stimsonite Series 6200)

**Signs: Type VII, High-Intensity Prismatic Grade**

- A. 3M Series 3900

**Signs: Type VI, Roll-Up Signs**

- A. Reflexite, Vinyl (Orange)
- B. Reflexite "SuperBright" (Fluorescent orange)
- C. Reflexite "Marathon" (Fluorescent orange)
- D. 3M Series RS34 (Orange) and RS20 (Fluorescent orange)

**SPECIALTY SIGN (All Plastic)**

- A. All Sign Products, STOP Sign, 750 mm

**SIGN SUBSTRATE FOR CONSTRUCTION AREA SIGNS**

**Aluminum**

**Fiberglass Reinforced Plastic (FRP)**

- A. Sequentia, "Polyplate"
- B. Fiber-Brite

**8-1.03 STATE-FURNISHED MATERIALS**

Attention is directed to Section 6-1.02, "State-Furnished Materials," of the Standard Specifications and these special provisions.

The following materials will be furnished to the Contractor:

- A. Sign panels for roadside signs and overhead sign structures.
- B. Hardware for mounting sign panels as follows:
  - 1. Blind rivets for mounting overlapping legend at sign panel joints.
  - 2. Closure inserts.
  - 3. Aluminum bolts and nuts and steel beveled washers for mounting laminated sign panels on overhead sign structures.
  - 4. Aluminum bolts, nuts, and washers for mounting overhead formed panels.
- C. Self-adhesive reflective equipment numbers and paint.

**8-1.04 ENGINEERING FABRICS**

Engineering fabrics shall conform to the provisions in Section 88, "Engineering Fabrics," of the Standard Specifications.

**SECTION 8-2. CONCRETE**

**8-2.01 PORTLAND CEMENT CONCRETE**

Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

References to Section 90-2.01, "Portland Cement," of the Standard Specifications shall mean Section 90-2.01, "Cement," of the Standard Specifications.

Mineral admixture shall be combined with cement in conformance with the provisions in Section 90-4.08, "Required Use of Mineral Admixtures," of the Standard Specifications for the concrete materials specified in Section 56-2, "Roadside Signs," of the Standard Specifications.

The requirements of Section 90-4.08, "Required Use of Mineral Admixture," of the Standard Specifications shall not apply to Section 19-3.025C, "Soil Cement Bedding," of the Standard Specifications.

Unless otherwise specified, mineral admixture will not be required in portland cement concrete used for precast concrete girders.

The Contractor will be permitted to use Type III portland cement for concrete used in the manufacture of precast concrete members.

## **SECTION 8-3. WELDING**

### **8-3.01 WELDING**

#### **GENERAL**

Flux core welding electrodes conforming to the requirements of AWS A5.20 E6XT-4 or E7XT-4 shall not be used to perform any type of welding for this project.

Wherever reference is made to the following AWS welding codes in the Standard Specifications, on the plans, or in these special provisions, the year of adoption for these codes shall be as listed:

| AWS Code           | Year of Adoption |
|--------------------|------------------|
| D1.1               | 2000             |
| D1.4               | 1992             |
| D1.5               | 1995             |
| D1.5 (metric only) | 1996             |

Requirements of the AWS welding codes shall apply unless specified otherwise in the Standard Specifications, on the plans, or in these special provisions. Wherever the abbreviation AWS is used, it shall be equivalent to the abbreviations ANSI/AWS or ANSI/AASHTO/AWS.

Sections 6.1.2 through 6.1.4.3 of AWS D 1.1, Sections 7.1.1 and 7.1.2 of AWS D 1.4, and Sections 6.1.1.1 through 6.1.3.3 of AWS D 1.5 are replaced with the following:

Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing prior to welding, during welding, and after welding as specified in this section and additionally as necessary to ensure that materials and workmanship conform to the requirements of the contract documents.

The QC Inspector shall be the duly designated person who acts for and on behalf of the Contractor for inspection, testing, and quality related matters for all welding.

Quality Assurance (QA) is the prerogative of the Engineer. The QA Inspector is the duly designated person who acts for and on behalf of the Engineer.

Each QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship, and shall be currently certified as an AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, "Standard and Guide for Qualification of Welding Inspectors."

The QC Inspector may be assisted by an Assistant QC Inspector provided that this individual is currently certified as an AWS Certified Associate Welding Inspector (CAWI) in conformance with the requirements in AWS QC1, "Standard and Guide for Qualification of Welding Inspectors," or has equivalent qualifications. The QC Inspector shall monitor the Assistant QC Inspector's work, and shall be responsible for signing all reports.

When the term "Inspector" is used without further qualification, it shall refer to the QC Inspector.

Section 6.14.6, "Personnel Qualification," of AWS D 1.1, Section 7.7.6, "Personnel Qualification," of AWS D 1.4, and Section 6.1.3.4, "Personnel Qualification," of AWS D 1.5 are replaced with the following:

Personnel performing nondestructive testing (NDT) shall be qualified in conformance with the requirements of the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of the NDT firm. The Written Practice of the NDT firm shall meet or exceed the requirements of the ASNT Recommended Practice No. SNT-TC-1A. Only individuals who are 1) qualified for NDT Level II, or 2) Level III technicians who have been directly certified by the ASNT and are authorized to perform the work of Level II technicians, shall perform NDT, review the results, and prepare the written reports.

Section 6.5.4, "Scope of Examination," of AWS D 1.1 and Section 7.5.4 of AWS D 1.4 are replaced with the following:

The QC Inspector shall inspect and approve the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved welding procedure specification (WPS) are met.

Section 6.5.4 of AWS D 1.5 is replaced with the following:

The QC Inspector shall inspect and approve the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved WPS are met. The QC Inspector shall examine the work to make certain that it meets the requirements of Sections 3 and 9.21. The size and contour of welds shall be measured using suitable gages. Visual inspection for cracks in welds and base metal, and for other discontinuities should be aided by strong light magnifiers, or such other devices as may be helpful. Acceptance criteria different from those specified in this code may be used when approved by the Engineer.

Section 6.6.5, "Nonspecified Nondestructive Testing Other Than Visual," of AWS D 1.1, Section 6.6.5 of AWS D 1.4 and Section 6.6.5 of AWS D 1.5 shall not apply.

For any welding, the Engineer may direct the Contractor to perform NDT that is in addition to the visual inspection or NDT specified in the AWS welding codes, in the Standard Specifications, or in these special provisions. Additional NDT required by the Engineer, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Should any welding deficiencies be discovered by this additional NDT, the cost of the testing will not be paid for as extra work but shall be at the Contractor's expense.

Required repair work to correct welding deficiencies, whether discovered by the required visual inspection or NDT, or by additional NDT directed by the Engineer, and any associated delays or expenses caused to the Contractor by performing these repairs, shall be at the Contractor's expense.

The Engineer shall have the authority to verify the qualifications or certifications of any welder, QC Inspector, or NDT personnel to specified levels by retests or other means.

A sufficient number of QC Inspectors shall be provided to ensure continuous inspection when any welding is being performed. Continuous inspection, as a minimum, shall include (1) having QC Inspectors continually present when any welding operation is being performed, or (2) having a QC Inspector within such close proximity of all welding operations that inspections by the QC Inspector of each operation, at each welding location, shall not lapse for a period exceeding 30 minutes.

Inspection and approval of the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder shall be documented by the QC Inspector on a daily basis for each day that welding is performed.

When joint details that are not prequalified by the applicable AWS codes are proposed for use in the work, welders using these details shall perform a qualification test plate using the approved WPS variables and the joint detail to be used in production. The test plate shall be the maximum thickness to be used in production. The test plate shall be mechanically or radiographically tested as directed by the Engineer. Mechanical and radiographic testing and acceptance criteria shall be as specified in the applicable AWS codes.

The period of effectiveness for a welder's or welding operator's qualification shall be a maximum of 3 years for the same weld process, welding position, and weld type. A valid qualification at the beginning of work on a contract will be acceptable for the entire period of the contract, as long as the welder's work remains satisfactory.

## **WELDING QUALITY CONTROL**

Welding quality control shall conform to the requirements in the AWS welding codes, the Standard Specifications, and these special provisions.

Unless otherwise specified, welding quality control shall apply when any work is welded in conformance with the provisions in Section 49, "Piling," Section 52, "Reinforcement," Section 55, "Steel Structures," Section 56-1, "Overhead Sign Structures," Section 75-1.035, "Bridge Joint Restrainer Units," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

The welding of fracture critical members (FCMs) shall conform to the provisions specified in the Fracture Control Plan (FCP) and herein.

The Contractor shall designate in writing a welding Quality Control Manager (QCM). The QCM shall be responsible directly to the Contractor for the quality of welding, including materials and workmanship, performed by the Contractor and subcontractors.

The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, and approving all correspondence, required submittals, and reports to and from the Engineer.

The QCM shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

Welding inspection personnel or NDT firms to be used in the work shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project, except for the following conditions:

- A. The welding is performed at a permanent fabrication facility which is certified under the AISC Quality Certification Program, Category Cbr, Major Steel Bridges.
- B. The welding is performed at a permanent fabrication facility which is certified under the AISC Quality Certification Program, Category Sbd, Conventional Steel Building Structures. This condition shall apply only for work welded in conformance with the provisions in Section 56-1, "Overhead Sign Structures" or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

For welding performed at such certified facilities, the inspection personnel or NDT firms may be employed or compensated by the fabrication facility performing the welding.

Prior to submitting the Welding Quality Control Plan (WQCP) required herein, a pre-welding meeting between the Engineer, Contractor, and any entity performing welding for this project, shall be held to discuss the requirements for the WQCP.

Except for work that is welded in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, prior to performing any welding, the Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate WQCP for each item of work for which welding is to be performed.

Prior to furnishing materials welded in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, the Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate WQCP for each fabrication facility supplying these materials or proof of previous Engineer approval of a WQCP for such a facility no more than one year prior to the delivery of materials for inspection.

As a minimum, each WQCP shall include the following:

- A. The name of the welding firm and any required NDT firms;
- B. A manual prepared by the NDT firm that shall include equipment, testing procedures, code of safe practices, the Written Practice of the NDT firm, and the names, qualifications, and documentation of certifications for all personnel to be used;
- C. The name of the QCM and the names, qualifications, and documentation of certifications for all QC Inspectors and Assistant QC Inspectors to be used;
- D. An organizational chart showing all QC personnel and their assigned QC responsibilities;
- E. The methods and frequencies for performing all required quality control procedures, including QC inspection forms to be used, as required by the specifications including:
  - 1. All visual inspections;
  - 2. All NDT including radiographic geometry, penetrometer and shim selection, film quality, film processing, radiograph identification and marking system, and film interpretation and reports; and
  - 3. Calibration procedures and calibration frequency for all NDT equipment;
- F. A system for the identification and tracking of all welds, NDT, and any required repairs, and a procedure for the reinspection of repaired welds. The system shall have provisions for 1) permanently identifying each weld and the person who performed the weld, 2) placing all identification and tracking information on each radiograph, 3) a method of reporting nonconforming welds to the Engineer, and 4) a method of documentation of repairs and reinspection of nonconforming welds;
- G. Standard procedures for performing noncritical repair welds. Noncritical repair welds are defined as welds to deposit additional weld beads or layers to compensate for insufficient weld size and to fill limited excavations that were performed to remove unacceptable edge or surface discontinuities, rollover or undercut. The depth of these excavations shall not exceed 65 percent of the specified weld size;
- H. The WPS, including documentation of all supporting Procedure Qualification Record (PQR) tests performed, and the name of the testing laboratory who performed the tests, to verify the acceptability of the WPS. The submitted WPS shall be within the allowable period of effectiveness;
- I. Documentation of all certifications for welders for each weld process and position that will be used. Certifications shall list the electrodes used, test position, base metal and thickness, tests performed, and the witnessing authority. All certifications shall be within the allowable period of effectiveness;

- J. One copy each of all AWS welding codes and the FCP which are applicable to the welding to be performed. These codes and the FCP shall become the permanent property of the Department; and
- K. Forms to be used for Certificates of Compliance, daily production logs, and daily reports.

The Engineer shall have 10 working days to review the WQCP submittal after a complete plan has been received. Except for work that is welded in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, no welding shall be performed until the WQCP is approved in writing by the Engineer. No materials welded in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, shall be incorporated into the work until the WQCP is approved in writing by the Engineer. Should the Engineer fail to complete the review within this time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the WQCP, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

An amended WQCP or addendum shall be submitted to, and approved in writing by the Engineer, for proposed revisions to the approved WQCP. An amended WQCP or addendum will be required for revisions to the WQCP, including but not limited to a revised WPS, additional welders, changes in NDT firms or procedures, QC, or NDT personnel, or updated systems for tracking and identifying welds. The Engineer shall have 3 working days to complete the review of the amended WQCP or addendum. Work that is affected by any of the proposed revisions shall not be performed until the amended WQCP or addendum has been approved. Should the Engineer fail to complete the review within this time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the amended WQCP or addendum, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

After final approval of the WQCP, amended WQCP, or addendum, the Contractor shall submit 7 copies to the Engineer of each of these approved documents.

It is expressly understood that the Engineer's approval of the Contractor's WQCP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications. The Engineer's approval shall not constitute a waiver of any requirement of the plans and specifications nor relieve the Contractor of any obligation thereunder, and defective work, materials, and equipment may be rejected notwithstanding approval of the WQCP.

A daily production log for welding shall be kept by the QCM for each day that welding is performed. The log shall clearly indicate the locations of all welding, except partial penetration longitudinal seam welds performed in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications. The log shall include the welders' names, amount of welding performed, any problems or deficiencies discovered, and any testing or repair work performed, at each location. The daily report from each QC Inspector shall also be included in the log.

The following items shall be included in a Welding Report that is to be submitted to the Engineer within 7 days following the performance of any welding. For work welded in conformance with Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, the following items shall be included in a Welding Report that is to be submitted to the Engineer 48 hours prior to the Contractor furnishing a Certificate of Compliance for the material:

- A. Reports of all visual weld inspections and NDT;
- B. Radiographs and radiographic reports, and other required NDT reports;
- C. Documentation that the Contractor has evaluated all radiographs and other nondestructive tests and corrected all rejectable deficiencies, and all repaired welds have been reexamined by the required NDT and found acceptable; and
- D. Daily production log.

Radiographic envelopes shall have clearly written on the outside of the envelope the following information: name of the QCM, name of the nondestructive testing firm, name of the radiographer, date, contract number, complete part description, and all included weld numbers or a report number, as detailed in the WQCP. In addition, all innerleaves shall have clearly written on them the part description and all included weld numbers, as detailed in the WQCP.

Reports regarding NDT, including radiographs, shall be signed by both the NDT technician and the person that performed the review, and then submitted directly to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or typewritten next to all signatures.

The Engineer will review the Welding Report to determine if the Contractor is in conformance with the WQCP. Unless otherwise specified, the Engineer shall be allowed 7 working days to review the report and respond in writing after a complete Welding Report has been received. Prior to receiving notification from the Engineer of the Contractor's conformance with the WQCP, the Contractor may encase in concrete or cover welds for which a Welding Report has been submitted. However, should the Contractor elect to encase or cover those welds prior to receiving notification from the Engineer, it is expressly understood that the Contractor shall not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection. Should the Contractor elect to wait to encase or cover welds pending notification by the

Engineer, and should the Engineer fail to complete the review and provide notification within this time allowance, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in notification, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The QC Inspector shall provide reports to the QCM on a daily basis for each day that welding is performed.

Except for noncritical weld repairs, the Engineer shall be notified immediately in writing when welding problems, deficiencies, base metal repairs, or any other type of repairs not submitted in the WQCP are discovered and also of the proposed repair procedures to correct them. The Engineer shall have 5 working days to review these procedures. No remedial work shall begin until the repair procedures are approved in writing by the Engineer. Should the Engineer fail to complete the review within this time allowance, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the proposed repair procedures, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each item of work for which welding was performed. The certificate shall state that all of the materials and workmanship incorporated in the work, and all required tests and inspections of this work, have been performed in conformance with the details shown on the plans and the provisions of the Standard Specifications and these special provisions.

## **PAYMENT**

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

### **SECTION 9. (BLANK)**

## **SECTION 10. CONSTRUCTION DETAILS**

### **SECTION 10-1. GENERAL**

#### **10-1.01 CONSTRUCTION PROJECT INFORMATION SIGNS**

Before any major physical construction work readily visible to highway users is started on this contract, the Contractor shall furnish and erect 2 Type 2 Construction Project Information signs at the locations designated by the Engineer.

The signs and overlays shall be of a type and material consistent with the estimated time of completion of the project and shall conform to the details shown on the plans.

The sign letters, border and the Department's construction logos shall conform to the colors (non-reflective) and details shown on the plans, and shall be on a white background (non-reflective). The colors blue and orange shall conform to PR Color Number 3 and Number 6, respectively, as specified in the Federal Highway Administration's Color Tolerance Chart.

The sign message to be used for fund types shall consist of the following, in the order shown:

|                                    |
|------------------------------------|
| <b>FEDERAL HIGHWAY TRUST FUNDS</b> |
| <b>STATE HIGHWAY FUNDS</b>         |

The sign message to be used for type of work shall consist of the following:

|                       |
|-----------------------|
| <b>HIGHWAY REPAIR</b> |
|-----------------------|

The sign message to be used for the Year of Completion of Project Construction will be furnished by the Engineer. The Contractor shall furnish and install the "Year" sign overlay within 10 working days of notification of the year date to be used.

The letter sizes to be used shall be as shown on the plans. The information shown on the signs shall be limited to that shown on the plans.

The signs shall be kept clean and in good repair by the Contractor.

Upon completion of the work, the signs shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

Full compensation for furnishing, erecting, maintaining, and removing and disposing of the construction project information signs shall be considered as included in the contract lump sum price paid for construction area signs and no additional compensation will be allowed therefor.

## 10-1.02 ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

Attention is directed to "Miscellaneous Concrete Construction" of these special provisions regarding constructing a 600 mm by 600 mm test panel prior to constructing curb ramps with detectable warning surfaces.

Temporary railing (Type K) and temporary crash cushions shall be secured in place prior to commencing work for which the temporary railing and crash cushions are required.

The uppermost layer of new pavement shall not be placed until all underlying conduits and loop detectors have been installed.

No overhead sign panel shall be installed until the overhead sign lighting is completely operational.

No above ground electrical work shall be performed on any system within the project site until all Contractor-furnished electrical materials for that individual system have been tested and delivered to Contractor.

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these special provisions and to the stage construction sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these special provisions regarding the submittal of a general time-scaled logic diagram within 10 days after approval of the contract. The diagram shall be submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The work shall be performed in conformance with the stages of construction shown on the plans. Nonconflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction.

In each stage, after completion of the preceding stage, the first order of work shall be the removal of existing pavement delineation as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

Before obliterating any pavement delineation that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefor.

At the end of each working day if a difference in excess of 0.045-meter exists between the elevation of the existing pavement and the elevation of excavations within 2.4 m right of the traveled way, and 1.5 m left of the traveled way, material shall be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 1:4 (vertical:horizontal) or flatter to the bottom of the excavation. Treated base shall not be used for the taper. Full compensation for placing the material on a 1:4 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

At those locations exposed to public traffic where guard railings or barriers are to be constructed, reconstructed, or removed, the Contractor shall schedule operations so that at the end of each working day there shall be no post holes open nor shall there be any railing or barrier posts installed without the blocks and rail elements assembled and mounted thereon.

Not less than 60 days prior to applying seeds, the Contractor shall furnish the Engineer a statement from the vendor that the order for the seed required for this contract has been received and accepted by the vendor. The statement from the vendor shall include the names and quantity of seed ordered and the anticipated date of delivery.

Attention is directed to "Irrigation Systems Functional Test" of these special provisions, regarding restrictions prior to performing concrete paver work.

Unless otherwise shown on the plans or specified in these special provisions, conduits to be installed by the open trench method for water line crossovers and sprinkler control crossovers shall be installed prior to the installation of other pipe supply lines.

Clearing, grubbing, and earthwork operations shall not be performed in areas where existing irrigation facilities are to remain in place until existing irrigation facilities have been checked for proper operation in conformance with the provisions in "Highway Planting and Irrigation Systems" of these special provisions.

Existing conduits to be extended shall be located in conformance with the provisions in "Extend Irrigation Crossovers" of these special provisions prior to the start of other work in these areas.

Attention is directed to "Shoulder Backing" of these special provisions regarding placing portable delineators and C31 signs.



### 10-1.03 WATER POLLUTION CONTROL (STORM WATER POLLUTION PREVENTION PLAN)

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications and these special provisions.

This project lies within the boundaries of the San Francisco Bay Regional Water Quality Control Board and shall conform to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for General Construction Activities No. CAS000002, Order No. 99-08-DWQ, and the NPDES Permit for the State of California Department of Transportation Properties, Facilities, and Activities, No. CAS000003, Order No. 99-06-DWQ issued by the State Water Resources Control Board. These permits, hereafter referred to as the "Permits," regulate storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and the "Construction Site Best Management Practices (BMPs) Manual," and addenda thereto issued up to, and including, the date of advertisement of the project, hereafter referred to respectively as the "Preparation Manual" and the "Construction Site BMP Manual" and collectively as the "Manuals." Copies of the Manuals and the Permits may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520. Copies of the Manuals may also be obtained from the Department's Internet Web Site at: <http://www.dot.ca.gov/hq/construc/stormwater.html>.

In addition, a Conceptual Storm Water Pollution Prevention Plan (CSWPPP) has been prepared for this project by the Department and is available for review at 111 Grand Avenue, Oakland, California 94601. Please call the Construction Office Duty Senior, telephone number (510)286-5209, to reserve a copy of the documents at least 24 hours in advance. This document may be used by the Contractor for developing the actual contract Storm Water Pollution Prevention Plan (SWPPP).

The Contractor shall know and fully comply with the applicable provisions of the Manuals, Permits, and Federal, State, and local regulations that govern the Contractor's operations and storm water discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall maintain copies of the Permits at the project site and shall make the Permits available during construction.

Unless arrangements for disturbance or use of areas outside the project limits are made by the Department and made part of the contract, it is expressly agreed that the Department assumes no responsibility for the Contractor or property owner with respect to any arrangements made between the Contractor and property owner. The Contractor shall implement, inspect and maintain all necessary water pollution control practices to satisfy all applicable Federal, State, and Local laws and regulations that govern water quality for areas used outside of the highway right-of-way or areas arranged for the specific use of the Contractor for this project. Installing, inspecting, and maintaining water pollution control practices on areas outside the highway right-of-way not specifically arranged for and provided for by the Department for the execution of this contract will not be paid for.

The Contractor shall be responsible for the costs and for liabilities imposed by law as a result of the Contractor's failure to comply with the provisions set forth in this section "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Manuals, Permits and Federal, State and local regulations. Costs and liabilities include, but are not limited to, fines, penalties, and damages whether assessed against the State or the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act.

In addition to the remedies authorized by law, money due the Contractor under the contract, in an amount determined by the Department, may be retained by the State of California until disposition has been made of the costs and liabilities.

When a regulatory agency or other third party identifies a failure to comply with the permit or any other local, State, or federal requirement, the Engineer may retain money due the Contractor, subject to the following:

- A. The Department will give the Contractor 30 days notice of the Department's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
- B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications.
- C. If the Department has retained funds and it is subsequently determined that the State is not subject to the costs and liabilities in connection with the matter for which the retention was made, the Department shall be liable for interest on the amount retained for the period of the retention, and the rate of interest payable shall be 6 percent per annum.

Conformance with the provisions of this section "Water Pollution Control" shall not relieve the Contractor from the Contractor's responsibilities, as provided in Section 7, "Legal Relations and Responsibilities," of the Standard Specifications.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records pertaining to water pollution control work.

## **STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS**

As part of the water pollution control work, a Storm Water Pollution Prevention Plan, hereafter referred to as the "SWPPP," is required for this contract. The SWPPP shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, the requirements in the Manuals, the requirements of the Permits, and these special provisions. Upon the Engineer's approval of the SWPPP, the SWPPP shall be considered to fulfill the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications for development and submittal of a Water Pollution Control Program.

No work having potential to cause water pollution, as determined by the Engineer, shall be performed until the SWPPP has been approved by the Engineer.

The Contractor shall designate a Water Pollution Control Manager. The Water Pollution Control Manager shall be responsible for the preparation of the SWPPP and any required modifications or amendments and shall be responsible for the implementation and adequate functioning of the various water pollution control practices employed. The Water Pollution Control Manager shall serve as the primary contact for all issues related to the SWPPP or its implementation. The Contractor shall submit to the Engineer a statement of qualifications, describing the training, previous work history and expertise of the individual selected by the Contractor to serve as Water Pollution Control Manager. The Engineer will reject the Contractor's submission of a Water Pollution Control Manager if the submitted qualifications are deemed to be inadequate.

Within 30 days after the approval of the contract, the Contractor shall submit 3 copies of the draft SWPPP to the Engineer. The Engineer will have 15 days to review the SWPPP. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within 15 days of receipt of the Engineer's comments. The Engineer will have 5 days to review the revisions. Upon the Engineer's approval of the SWPPP, 4 approved copies of the SWPPP, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed, the Engineer may conditionally approve the SWPPP while minor revisions are being completed. If the Engineer does not review or approve the SWPPP within the time specified, compensation will be made in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The SWPPP shall apply to all areas that are directly related to construction including, but not limited to, staging areas, storage yards, material borrow areas, and access roads within or outside of the highway right-of-way.

The SWPPP shall incorporate water pollution control practices in the following six categories:

- A. Soil stabilization;
- B. Sediment control;
- C. Wind erosion control;
- D. Tracking control;
- E. Non-storm water control; and
- F. Waste management and material pollution control.

The Contractor shall develop a Water Pollution Control Schedule that shall describe the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the Contractor to reflect any changes in the Contractor's operations that would affect the necessary implementation of water pollution control practices.

The Contractor shall incorporate the "Minimum Requirements" presented in the Preparation Manual into the SWPPP. In addition to the "Minimum Requirements" presented in the Preparation Manual, the Contractor shall complete the BMP Consideration Checklist presented in the Preparation Manual. The Contractor shall identify and incorporate into the SWPPP the water pollution control practices selected by the Contractor or as directed by the Engineer.

In addition to the Minimum Requirements presented in the Preparation Manual, special requirements shall be incorporated into the SWPPP and the Water Pollution Control Cost Break-Down as follows:

| Special Requirement(s)                         |  |
|--|--|
| Category                                       | BMP, location and quantity                           |
| Soil Stabilization Practices                   | SS-10 Outlet Protection/Velocity Dissipation Devices |
| Sediment Control Practices                     |  |
| Wind Erosion Control                           |  |
| Tracking Control Practices                     |  |
| Non Storm Water Control                        | NS-3 Paving and Grinding Operations                  |
| Waste Management & Materials Pollution Control |  |

The following contract items of work, shall be incorporated into the SWPPP as "Temporary Water Pollution Control Practices": Temporary Rock Bag Check Dam, Temporary Silt Fence, Temporary Drainage Inlet Protection, Temporary Cover, Temporary Entrance/Exit, and Temporary Concrete Washout Facility. The Contractor's attention is directed to these special provisions provided for each temporary water pollution control practice. The following contract items of work, as shown on the project plans or as specified elsewhere in these special provisions, shall be identified in the SWPPP as permanent water pollution control practices: Erosion Control Blanket, and Erosion Control (Type D). These permanent water pollution control practices shall be constructed as specified in "Order of Work" of these special provisions, and utilized during the construction period. The Contractor shall maintain and protect the permanent water pollution control practices throughout the duration of the project and shall restore these controls to the lines, grades and condition shown on the plans prior to acceptance of the contract.

The SWPPP shall include, but not be limited to, the items described in the Manuals, Permits and related information contained in the contract documents. In addition the SWPPP shall include a copy of the following:

1. Notification of Construction

The Contractor shall prepare an amendment to the SWPPP when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when the Contractor's activities or operations violate any condition of the Permits, or when directed by the Engineer. Amendments shall show additional water pollution control practices or revised operations, including those areas or operations not shown in the initially approved SWPPP. Amendments to the SWPPP shall be prepared, and submitted for review and approval in the same manner as specified for the SWPPP approval. Subsequent amendments shall be submitted within a time approved by the Engineer, but in no case longer than the time specified for the initial submittal and review of the SWPPP. At a minimum, the SWPPP shall be amended annually and submitted to the Engineer 25 days prior to the defined rainy season.

The Contractor shall keep one copy of the approved SWPPP and approved amendments at the project site. The SWPPP shall be made available upon request of a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency or the local storm water management agency. Requests by the public shall be directed to the Engineer.

### **COST BREAK-DOWN**

The Contractor shall submit to the Engineer a cost break-down for the contract lump sum item of water pollution control, together with the SWPPP.

The cost break-down shall be completed and furnished in the format shown in the example of the cost break-down included in this section. Unit descriptions and quantities shall be designated by the Contractor, except for the specified special requirements shown in the example. The units and quantities given in the example, if provided, are special requirements specified for the SWPPP, and shall be included in the cost break-down furnished to the Engineer. The Contractor shall verify the estimated quantities of the special requirements and submit revised quantities in the cost break-down.

The Contractor shall determine the quantities required to complete the work of water pollution control. The quantities and their values shall be included in the cost break-down submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-down submitted for approval. The cost break-down shall not include water pollution control practices which are shown on the plans and for which there is a separate contract item.

The sum of the amounts for the units of work listed in the cost break-down shall be equal to the contract lump sum price bid for water pollution control. Attention is directed to "Time Related Overhead" of these special provisions. Profit shall be included in each individual unit listed in the cost break-down. The cost break-down shall be submitted and approved within the same times specified for the SWPPP. Partial payment for the item of water pollution control will not be made until the cost break-down is approved, in writing, by the Engineer.

Adjustments in the items of work and quantities listed in the approved cost break-down shall be made when required to address amendments to the SWPPP, except when the adjusted items are paid for as extra work.

No adjustment in compensation will be made in the contract lump sum price paid for water pollution control due to differences between the quantities shown in the approved cost break-down and the quantities required to complete the work as shown on the approved SWPPP. No adjustment in compensation will be made for ordered changes to correct SWPPP work resulting from the Contractor's own operations or from the Contractor's negligence.

The approved cost break-down will be used to determine partial payments during the progress of the work and as the basis for calculating the adjustment in compensation for the item of water pollution control due to increases or decreases of quantities ordered by the Engineer. When an ordered change increases or decreases the quantities of an approved cost break-down item, the adjustment in compensation will be determined in the same manner specified for increases and decreases in the quantity of a contract item of work in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications. If an ordered change requires a new item not on the approved cost break-down, the adjustment in compensation will be determined in the same manner specified for extra work in conformance with Section 4-1.03D, "Extra Work," of the Standard Specifications.

If requested by the Contractor and approved by the Engineer, changes to the water pollution control practices listed in the approved cost break-down, including the addition of new water pollution control practices, will be allowed. The changes shall be included in an approved amendment to the SWPPP. If the changes to the water pollution control practices requested by the Contractor would result in a net cost increase to the lump sum price for water pollution control, an adjustment in compensation will be made without change to the item of water pollution control. The net cost increase to the item of water pollution control resulting from changes requested by the Contractor will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

## WATER POLLUTION CONTROL COST BREAK-DOWN

**Contract No. 04-0T0504**

| UNIT DESCRIPTION  | UNIT | APPROXIMATE QUANTITY | VALUE | AMOUNT |
|---|------|----------------------|-------|--------|
| SS-1 Scheduling   | LS   | Lump Sum             |       |        |
| SS-2 Preservation of Existing Vegetation                          | LS   | Lump Sum             |       |        |
| SS-3 Hydraulic Mulch  | LS   | Lump Sum             |       |        |
| SS-4 Hydroseeding   | LS   | Lump Sum             |       |        |
| SS-5 Soil Binders   | LS   | Lump Sum             |       |        |
| SS-6 Straw Mulch  | LS   | Lump Sum             |       |        |
| Temporary Entrance/Exit   | EA   | 4                    |       |        |
| Temporary Cover   | M2   | 1200                 |       |        |
| SS-10 Outlet Protection/Velocity Dissipation Devices              | LS   | Lump Sum             |       |        |
| Temporary rock bag check dam                                      | M    | 50                   |       |        |
| Temporary Concrete Washout facility                               | EA   | 2                    |       |        |
| Temporary Silt Fence  | M    | 500                  |       |        |
| SC-7 Street Sweeping and Vacuuming                                | LS   | Lump Sum             |       |        |
| Temporary Storm Drain Inlet Protection                            | EA   | 14                   |       |        |
| WE-1 Wind Erosion Control   | LS   | Lump Sum             |       |        |
| NS-3 Paving and Grinding Operations                               | LS   | Lump Sum             |       |        |
| NS-6 Illicit Connection/Illegal Discharge Detection and Reporting | LS   | Lump Sum             |       |        |
| NS-8 Vehicle and Equipment Cleaning                               | LS   | Lump Sum             |       |        |
| NS-9 Vehicle and Equipment Fueling                                | LS   | Lump Sum             |       |        |
| NS-10 Vehicle and Equipment Maintenance                           | LS   | Lump Sum             |       |        |
| WM-1 Material Delivery and Storage                                | LS   | Lump Sum             |       |        |
| WM-2 Material Use   | LS   | Lump Sum             |       |        |
| WM-4 Spill Prevention and Control                                 | LS   | Lump Sum             |       |        |
| WM-5 Solid Waste Management                                       | LS   | Lump Sum             |       |        |
| WM-9 Sanitary/Septic Waste Management                             | LS   | Lump Sum             |       |        |

**TOTAL** \_\_\_\_\_

## SWPPP IMPLEMENTATION

Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for installing, constructing, inspecting, maintaining, removing and disposing of the water pollution control practices included in the SWPPP and any amendments. Unless otherwise directed by the Engineer, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. Requirements for installation, construction, inspection, maintenance, removal, and disposal of water pollution control practices are specified in the Manuals and these special provisions.

If the Contractor or the Engineer identifies a deficiency in any aspect of the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately. The deficiency may be corrected at a later date and time if requested by the Contractor and approved by the Engineer in writing, but not later than the onset of precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation the project shall be in noncompliance. Attention is directed to Section 5-1.01, "Authority of the Engineer," of the Standard Specifications and the payment sections of these special provisions for possible noncompliance penalties.

If the Contractor fails to conform to the provisions of "Water Pollution Control," the Engineer may order the suspension of construction operations which create water pollution.

Implementation of water pollution control practices may vary by season. The Construction Site BMP Manual and these special provisions shall be followed for control practice selection of year round, rainy season and non-rainy season water pollution control practices.

### Year-Round Implementation Requirements

The Contractor shall have a year-round program for implementing, inspecting and maintaining water pollution control practices for wind erosion control, tracking control, non-storm water control, and waste management and materials pollution control.

The National Weather Service weather forecast shall be monitored and used by the Contractor on a daily basis. An alternative weather forecast proposed by the Contractor may be used if approved by the Engineer. If precipitation is predicted, the necessary water pollution control practices shall be deployed prior to the onset of the precipitation.

Disturbed soil areas shall be considered active whenever the soil disturbing activities have occurred, continue to occur or will occur during the ensuing 21 days. Non-active areas shall be protected as prescribed in the Construction Site BMP Manual within 14 days of cessation of soil disturbing activities or prior to the onset of precipitation, whichever occurs first.

In order to provide effective erosion control the Contractor may be directed to apply permanent erosion control in small or multiple units as disturbed soil areas are deemed substantially complete by the Engineer. The Contractor's attention is directed to "Erosion Control" and "Move-In Move-Out (Erosion Control)" of these special provisions.

The Contractor shall implement, maintain, and inspect the following temporary sediment control practices on a year-round basis. The listed practices shall remain in place until their use is no longer needed, as determined by the Engineer.

| <b>Year-Round<br/>Sediment Control Practices</b> | <b>Location used</b>   |
|--|--|
| Temporary silt fence                             | At the toe of construction slopes and areas draining to drainage inlets, ditches and gutters |
| Temporary entrance/exits                         | At the interface where construction equipment enters or exits public or private roadways     |

### Rainy Season Requirements

Soil stabilization and sediment control practices conforming to the requirements in the Special Requirements and applicable Preparation Manual Minimum Requirements, shall be provided throughout the rainy season, defined as between October 15 and April 15.

An implementation schedule of required soil stabilization and sediment control practices for disturbed soil areas shall be completed not later than 20 days prior to the beginning of each rainy season. The implementation schedule shall identify the soil stabilization and sediment control practices to be implemented and the dates on which the implementation will be 25 percent, 50 percent and 100 percent complete, respectively. Construction activities beginning during the rainy season shall implement applicable soil stabilization and sediment control practices. The Contractor shall implement soil stabilization and sediment control practices a minimum of 10 days prior to the start of the rainy season.

Throughout the defined rainy season, the active disturbed soil area of the project site shall be not more than 2.0 hectares. The Engineer may approve, on a case-by-case basis, expansions of the active disturbed soil area limit. Soil stabilization and sediment control materials shall be maintained on site sufficient to protect the unprotected disturbed soil area. A detailed plan for the mobilization of sufficient labor and equipment shall be maintained to deploy the water pollution control practices required to protect the project site prior to the onset of precipitation events.

### **Non-Rainy Season Requirements**

The non-rainy season shall be defined as all days outside the defined rainy season. The Contractor's attention is directed to the Construction Site BMP Manual for soil stabilization and sediment control implementation requirements on disturbed soil areas during the non-rainy season. Disturbed soil areas within the project shall be protected in conformance with the requirements in the Construction Site BMP Manual with an effective combination of soil stabilization and sediment control.

### **MAINTENANCE**

To ensure the proper implementation and functioning of water pollution control practices, the Contractor shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP. The construction site shall be inspected by the Contractor as follows:

- A. Prior to a forecast storm;
- B. After a precipitation event which causes site runoff;
- C. At 24 hour intervals during extended precipitation events;
- D. Routinely, a minimum of once every week outside of the defined rainy season;
- E. Routinely, a minimum of once every week during the defined rainy season.

The Contractor shall use the Storm Water Quality Construction Site Inspection Checklist provided in the CSWPPP or an alternative inspection checklist provided by the Engineer. One copy of each site inspection record shall be submitted to the Engineer within 24 hours of completing the inspection.

### **REPORTING REQUIREMENTS**

#### **Report of Discharges, Notices or Orders**

If the Contractor identifies any discharge in a manner causing, or potentially causing, a condition of pollution, or if the project receives a written notice or order from any regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within 7 days of the discharge event, notice, or order. The report shall include the following information:

- A. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.
- B. The water pollution control practices deployed before the discharge event, or prior to receiving the notice or order.
- C. The date of deployment and type of water pollution control practices deployed after the discharge event, or after receiving the notice, or order, including additional measures installed or planned to reduce or prevent reoccurrence.
- D. An implementation and maintenance schedule for any affected water pollution control practices.

#### **Report of First-Time Non-Storm Water Discharge**

The Contractor shall notify the Engineer at least 3 days in advance of each first-time non-storm water discharge event, excluding exempted discharges. The Contractor shall notify the Engineer of each different operation causing a non-storm water discharge and shall obtain field approval for each first-time non-storm water discharge. Non-storm water discharges shall be monitored at each first-time occurrence and routinely thereafter.

#### **Annual Certifications**

By June 15 of each year, the Contractor shall complete and submit an Annual Construction Activity Certification as contained in the Preparation Manual to the Engineer.

### **PAYMENT**

The contract lump sum price paid for prepare storm water pollution prevention plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising, and amending the SWPPP, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Attention is directed to Section 9-1.06, "Partial Payments," and Section 9-1.07, "Payment After Acceptance," of the Standard Specifications. Payments for prepare storm water pollution prevention plan will be made as follows:

- A. After the SWPPP has been approved by the Engineer, 75 percent of the contract item price for prepare storm water pollution prevention plan will be included in the monthly partial payment estimate; and
- B. After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, payment for the remaining 25 percent of the contract item price for prepare storm water pollution prevention plan will be made in conformance with the provisions in Section 9-1.07.

The contract lump sum price paid for water pollution control shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing, constructing, removing, and disposing of water pollution control practices, including non-storm water and waste management and materials pollution water pollution control practices except those shown on the plans and for which there is a contract item of work, and excluding developing, preparing, obtaining approval of, revising, and amending the SWPPP, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The cost of maintaining the temporary water pollution control practices shall be divided equally by the State and the Contractor as follows:

**Soil Stabilization**

All temporary water pollution control practices except:

SS-1 Scheduling

SS-2 Preservation of Existing Vegetation

**Sediment Control**

All temporary water pollution control practices.

**Tracking Control**

All temporary water pollution control practices except:

SC-7 Street Sweeping and Vacuuming

**Wind Erosion Control**

All temporary water pollution control practices.

**Non-Storm Water Control**

No sharing of maintenance costs will be allowed.

**Waste Management & Material Control**

No sharing of maintenance costs will be allowed.

The division of cost will be made by determining the cost of maintaining temporary water pollution control practices in conformance with the provisions in Section 9-1.03, "Force Account Payment," of the Standard Specifications and paying to the Contractor one-half of that cost. Clean-up, repair, removal, disposal, improper installation, and replacement of temporary water pollution control practices damaged by the Contractor's negligence shall not be considered as included in the cost for performing maintenance and no additional compensation will be allowed therefor.

The provisions for sharing maintenance costs shall not relieve the Contractor from the responsibility for providing appropriate maintenance on those items where maintenance costs are not shared.

Full compensation for maintenance costs of water pollution control practices not shared, as specified in these special provisions, shall be considered as included in the contract lump sum price paid for water pollution control and no additional compensation will be allowed therefor.

Those water pollution control practices which are shown on the plans and for which there is a contract item of work will be measured and paid for as that contract item of work.

The Engineer will retain an amount equal to 25 percent of the estimated value of the contract work performed during estimate periods in which the Contractor fails to conform to the provisions of this section "Water Pollution Control," as determined by the Engineer.



Retention for failure to conform to the provisions in this section "Water Pollution Control" shall be in addition to the other retention provided for in the contract. The amounts retained for failure of the Contractor to conform to the provisions in this section will be released for payment on the next monthly estimate for partial payment following the date that an approved SWPPP has been implemented and maintained, and water pollution is adequately controlled, as determined by the Engineer.

#### **10-1.04 TEMPORARY FENCE**

Temporary fence shall be furnished, constructed, maintained, and later removed as shown on the plans, as specified in these special provisions and as directed by the Engineer.

Except as otherwise specified in this section, temporary fence shall conform to the plan details and the specifications for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Used materials may be installed provided the used materials are good, sound and are suitable for the purpose intended, as determined by the Engineer.

Materials may be commercial quality provided the dimensions and sizes of the materials are equal to, or greater than, the dimensions and sizes shown on the plans or specified herein.

Posts shall be either metal or wood at the Contractor's option.

Galvanizing and painting of steel items will not be required.

Treating wood with a wood preservative will not be required.

Concrete footings for metal posts will not be required.

Temporary fence that is damaged during the progress of the work shall be repaired or replaced by the Contractor at the Contractor's expense.

When no longer required for the work, as determined by the Engineer, temporary fence shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work, except as otherwise provided in this section.

Removed temporary fence materials that are not damaged may be constructed in the permanent work provided the materials conform to the requirements specified for the permanent work and such materials are new when used for the temporary fence.

Holes caused by the removal of temporary fence shall be backfilled in conformance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

The various types and kinds of temporary fence will be measured and paid for in the same manner specified for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Full compensation for maintaining, removing, and disposing of temporary fence shall be considered as included in the contract prices paid per meter for the various types of temporary fence and no additional compensation will be allowed therefor.

#### **10-1.05 TEMPORARY SILT FENCE**

Temporary silt fence shall conform to the details shown on the plans and these special provisions.

Temporary silt fence shall be furnished, installed, maintained, and removed at the locations shown on the plans.

Preparation shall conform to the provisions in Section 20-3.02, "Preparation," of the Standard Specifications.

Attention is directed to "Water Pollution Control" of these special provisions.

#### **MATERIALS**

Materials for temporary silt fence shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and one of the following:

Temporary silt fence shall be a prefabricated silt fence with a minimum woven polypropylene fabric width of 900 mm and a minimum tensile strength of 0.44-kN, conforming to the requirements of ASTM Designation: D 4632.

Temporary silt fence shall be a prefabricated silt fence with a minimum woven polypropylene fabric width of 900 mm and a minimum tensile strength of 0.44-kN, conforming to the requirements of ASTM Designation: D 4632 and having an integral reinforcement layer. The reinforcement layer shall be a polypropylene or equivalent net provided by the manufacturer.

#### **INSTALLATION**

Temporary silt fence shall be installed as shown on the plans.

When joints are necessary, the temporary silt fence shall overlap a minimum of 150 mm with both posts tied together.

Temporary silt fences shall be maintained to provide for adequate sediment holding capacity. Sediment deposits shall be removed when the sediment deposit reaches approximately one-third of the fence height. Removed sediment shall be deposited within the project in such a way that the sediment is not subject to erosion by wind or water, or as directed by the Engineer.

When no longer required for the intended purpose, as determined by the Engineer, temporary silt fence shall be removed from the site of the work.

Holes, depressions or any other ground disturbance caused by the removal of the temporary silt fence shall be backfilled and repaired in conformance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## MEASUREMENT AND PAYMENT

Full compensation for temporary silt fence shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

### 10-1.06 TEMPORARY ENTRANCE/EXIT

Temporary entrance/exit and clean out sump shall conform to the details shown on the plans and these special provisions. The minimum quantity of temporary entrance/exit required for this project shall be 4.

Temporary entrance/exit (Type 1 or 2) shall be furnished, installed, maintained and removed at the locations shown on the plans.

The Contractor shall provide as many temporary construction entrance/exits and clean out sumps as required for the duration of the contract. Attention is directed to "Water Pollution Control" elsewhere in these special provisions.

The Contractor shall use temporary entrance/exit as one of the various measures to prevent water pollution. The Storm Water Pollution Prevention Plan shall graphically show the use of temporary entrance/exit in relation to other water pollution control work specified elsewhere in these special provisions.

**MATERIALS.**—Materials shall conform the following:

- A. **Subgrade Enhancement Fabric.**--Subgrade enhancement fabric shall be placed where shown on the plans and at locations designated by the Engineer in accordance with this special provision.

Subgrade enhancement fabric shall be manufactured from one or more of the following materials: polyester, nylon or polypropylene. Subgrade enhancement fabric shall be, at the option of the contractor, either a woven filament or nonwoven type fabric conforming to the following:

|   | Woven   | Non-Woven |
|---|---------|-----------|
| Weight, grams per Square Meter,<br>Min.<br>ASTM Designation: D3776        | 205     | 205       |
| Grab Tensile Strength, Newtons (N),<br>Min.<br>ASTM Designation: D4632    | 890     | 800       |
| Tensile Strength at 10% Elongation,<br>N, Min.<br>ASTM Designation: D4632 | 490     | --        |
| Elongation at Break, Percent, Max.<br>ASTM Designation: D4632             | 35 Max. | 50 Min.   |

Subgrade enhancement fabric shall be furnished in an appropriate protective cover which shall protect it from ultraviolet radiation and from abrasion due to shipping and handling, and shall remain covered until installation. Subgrade enhancement fabric shall be accompanied by a Certificate of Compliance conforming to the provision in Section 6-1.07, "Certificate of Compliance" of the Standard Specifications.

- B. **Aggregate.**--Aggregate shall be uniformly graded angular rock or cobble ranging in size from 76.2mm-180mm. Rock shall be clean and free of organic matter and shall conform to the provisions in Section 26, "Aggregate Base," of the Standard Specifications and these special provisions.
- C. **Corrugated Steel Panels.**--Manufactured corrugated steel panels with raised bars shall be provided in individual sections. Steel plate and raised bars shall be a minimum 12.7mm thick. Bars shall be a minimum of 38.1mm in height and shall be uniformly distributed 190.5mm apart longitudinally throughout the full section of each panel. Raised bars shall be welded to the bottom plate and approximately 12.7mm thick at the base and tapering to 6.35mm thick at the top of the bar. Each panel shall have a nominal dimension of 3m X 2.43m with an approximate weight

of 1454 kg for each panel. Each end of the panel shall have a slot or hooked section to facilitate coupling at the ends.

## **INSTALLATION**

Temporary entrance/exit and clean out sump shall be installed as shown on the plans and as follows:

- A. Prior to placing the subgrade enhancement fabric, the areas shall be cleared of all trash and debris. Weeds shall be removed to the ground level. Cleared trash, debris, and removed weeds shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications.
- B. Subgrade enhancement fabric shall be handled and placed in accordance with the manufacturer's recommendation and shall be positioned longitudinally along the alignment, pulled taut to form a tight wrinkle-free mat. The subgrade to receive the fabric, immediately prior to placing, shall conform to the compaction and elevation tolerance specified in Section 25-1.03, "Subgrade", of the Standard Specifications and these special provisions and shall be free of loose or extraneous material and sharp objects that may damage the fabric during the installation.

Adjacent borders of the fabric shall be overlapped a minimum of 450 mm.

The amount of subgrade enhancement fabric placed shall be limited to that which can be covered with aggregate material within 72 hours.

Aggregate material to be placed directly over the subgrade enhancement fabric shall be spread in the direction of fabric overlaps. Stockpiling of materials directly on the subgrade enhancement fabric is not allowed. Once a sufficient working platform has been constructed, all remaining materials shall be uniformly placed and spread with 1:4 (V:H) tapers at the perimeter edges of the temporary entrance/exit where it conforms to existing roadway and in accordance with the applicable sections of the special provisions and the Standard Specifications.

During spreading of the aggregate material, vehicles or equipment shall not be driven directly on the fabric. A sufficient thickness of material shall be maintained between the fabric and the equipment to prevent damage to the fabric. Damage to the fabric resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

Should the fabric be damaged during placing, the damaged section shall be repaired by placing a new piece of fabric over the damaged area. Said piece of fabric shall be large enough to cover the damaged area and provide a minimum 900 mm overlay on all edges.

Corrugated steel panels shall be installed as shown on the plans. A minimum of 3 panel sections coupled to one another is required at each temporary entrance/exit. Prior to installing panels, the ground surface shall be cleared of all debris which may prevent uniform contact with the ground surface.

A clean out sump shall be installed as shown on the plans and located within 6m of the entrance/exit facility. The sump shall be sized sufficiently to hold soil removed from the surfacing of the entrance /exit facility in order to maintain efficiency.

## **MAINTENANCE**

The Contractor shall maintain the temporary entrance/exit and clean out sump throughout the contract period. The Contractor shall prevent displacement or migration of the aggregate surfacing or corrugated steel panels. Any significant depressions, as determined by the Engineer, which form due to settling or heavy traffic shall be repaired by the Contractor.

Sediment and soil built up in the temporary entrance/exit surface which compromises the efficiency for sediment and soil removing capability shall be removed as necessary or as determined by the Engineer. Removal and disposal of sediment and soils from the entrance/exit and the clean out sump shall be the responsibility of the Contractor.

Once the temporary entrance/exit and clean out sump is no longer needed, the aggregate, subgrade enhancement fabric and any soil and sediments shall be removed and disposed of as provided for in Section 7-1.13 'Disposal of Material Outside of the Highway Right of Way' of the Standard Specifications. Following removal of the temporary entrance/exit and clean out sump, the areas shall be graded smooth and compacted to conform with adjacent areas.

## **PAYMENT**

Full compensation for temporary entrance/exit shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

### **10-1.07 PRESERVATION OF PROPERTY**

Attention is directed to Section 7-1.11, "Preservation of Property," of the Standard Specifications and these special provisions.

Existing trees, shrubs and other plants, that are not to be removed as shown on the plans or specified in these special provisions, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor. The minimum size of tree and shrub replacement shall be No. 15 container. Replacement ground cover plants shall be from flats and shall be planted 300 mm on center. The Contractor shall water replacement plants in conformance with the provisions in Section 20-4.06, "Watering," of the Standard Specifications.

Damaged or injured plants shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications. At the option of the Contractor, removed trees and shrubs may be reduced to chips. The chipped material shall be spread within the highway right of way at locations designated by the Engineer.

Replacement planting of injured or damaged trees, shrubs and other plants shall be completed not less than 20 working days prior to acceptance of the contract. Replacement plants shall be watered as necessary to maintain the plants in a healthy condition.

#### **10-1.08 TEMPORARY ROCK BAG CHECK DAM**

Temporary rock bag check dam shall conform to the details shown on the plans and these special provisions. Temporary rock bags shall be used in concrete drainage swales and lined ditches as check dams.

Temporary rock bag check dam shall be furnished, installed, maintained and removed at the locations shown on the plans.

Preparation shall conform to the provisions in Section 20-3.02, "Preparation," of the Standard Specifications.

Attention is directed to "Water Pollution Control" of these special provisions.

#### **MATERIALS**

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications.

Rock bag fabric shall be non-woven polypropylene, with a minimum unit weight of 250 g/m<sup>2</sup>. The fabric shall have a mullen burst strength of at least 2500 kPa, conforming to the requirements in ASTM Designation: D 3786 and an ultraviolet (UV) stability exceeding 70 percent at 500 hours.

Rock bags shall have a length of 600 mm to 800 mm, width of 400 mm to 500 mm, thickness of 150 mm to 200 mm, and be capable of containing a weighted mass of 13 kg to 22 kg.

Rock bag fill material shall be non-cohesive, gravel, free from deleterious material.

#### **INSTALLATION**

Temporary rock bag check dam consisting of rock bags placed in multiple layers shall be installed as shown on the plans. Rock bags shall be placed in three layers with a gap in the third layer to serve as a spillway.

#### **INSTALLATION**

Temporary rock bag check dam shall be maintained to provide for adequate sediment holding capacity. Sediment deposits shall be removed when the deposit reaches one-third of the temporary rock bag check dam height. Removed sediment shall be deposited within the project in such a way that the sediment is not subject to erosion by wind or water, or as directed by the Engineer.

When no longer required for the intended purpose, as determined by the Engineer, temporary rock bag check dam shall be removed from the site of the work.

#### **MEASUREMENT AND PAYMENT**

Full compensation for temporary rock bag check dam shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

#### **10-1.09 TEMPORARY CONCRETE WASHOUT FACILITY**

Temporary concrete washout facilities shall be constructed, maintained, and later removed as shown on the plans, in conformance with these special provisions and as directed by the Engineer.

Temporary concrete washout facilities shall be installed prior to beginning any placement of concrete and located a minimum of 15 m from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the Engineer. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.

A sign shall be installed as shown on the plans adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. The minimum quantity of concrete washouts required for this project shall be 3.

Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations for all concrete wastes. These facilities shall be constructed to contain all liquid and concrete waste without seepage, spillage or overflow.

## **MATERIALS**

Materials used in the construction of temporary concrete washout facility shall conform to the following:

- A **PLASTIC SHEETING.**—Plastic sheeting shall be new and a minimum of 0.33 mm thick polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Plastic sheeting shall not have seams or overlapping joints.
- B **ROCK BAG.**—Rock bag fabric shall be non-woven polypropylene, with a minimum unit weight of 250g/m<sup>2</sup>. The fabric shall have a mullen burst strength of at least 2500 kPa, per ASTM Designation D3786 and an ultraviolet (UV) stability exceeding 70 percent at 500 hours. Rock bags shall have a length of 600 mm to 800 mm, width of 400 mm to 500 mm, thickness of 150 mm to 200 mm, and capable of containing a weighted mass of 13 kg to 22 kg. Rock bag fill material shall be non-cohesive, gravel, free from deleterious material. Rock bags shall be filled and the opening secured such that rock shall not escape from the bag.
- C **STRAW BALES.**—Straw for straw bales shall conform to the provisions in Section 20-2.06, "Straw," of the Standard Specifications.

Each straw bale shall be a minimum of 360 mm wide, 450 mm in height, 900 mm in length and shall have a minimum mass of 23 kg. The straw bale shall be composed entirely of vegetative matter, except for binding material.

Bales shall be bound by either wire, nylon or polypropylene string. Jute and cotton binding shall not be used. Wire shall be a minimum of 1.57 mm (16-gage) baling wire. Nylon or polypropylene string shall be approximately 2 mm in diameter with 360 N of breaking strength.

- D **STAKES.**—Stakes shall be 50 mm x 50 mm wood posts. Each stake shall have a minimum length of one meter.

## **TEMPORARY CONCRETE WASHOUT FACILITY (TYPE ABOVE GRADE)**

Temporary concrete washout facility (type above grade) shall be constructed as shown on the plans with a minimum length of 3 m and a minimum width of 3 m. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the Engineer.

## **TEMPORARY CONCRETE WASHOUT FACILITY (TYPE BELOW GRADE)**

Temporary concrete washout facility (type below grade) shall be constructed as shown on the plans with a minimum length of 3 m and a minimum width of 3 m. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the Engineer.

## **MAINTENANCE AND REMOVAL**

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 100mm for above grade facilities and 300mm for below grade facilities. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications. Minor holes and tears in the plastic sheeting may be taped as long as the repair does not compromise the impermeability of the material.

When temporary concrete washout facilities are no longer required for the work, as determined by the Engineer, the hardened concrete shall be removed and disposed of in conformance with the provisions in Section 15-3.02 of the Standard Specifications. Materials used to construct temporary concrete washout facilities shall become the property of the Contractor, shall be removed from the site of the work, and shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **PAYMENT**

Full compensation for temporary concrete washout facilities shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

### **10-1.10 TEMPORARY COVER**

Temporary cover shall conform to the details shown on the plans. The minimum quantity of temporary cover required for this project shall be 600 square meters.

The Contractor shall use temporary cover as one of the various measures to prevent water pollution. The Storm Water Pollution Prevention Plan shall graphically show the use of temporary cover in relation to other water pollution control work specified elsewhere in these special provisions.

## **MATERIALS**

Materials shall conform to the following for either plastic or fabric sheeting:

If fabric is used, the fabric shall be a minimum 115 g/m<sup>2</sup> slit film woven fabric made of monofilaments of polypropylene. The fabric shall be non biodegradable, resistant to sunlight deterioration, inert to most soil chemicals and furnished with sealed edges on all sides to prevent unraveling. The fabric shall also conform to the following:

| Properties                    |              |
|-------------------------------|--------------|
| Grab tensile strength         | 0.85-0.95 kn |
| Elongation at break (minimum) | 15%          |

If plastic sheeting is used, the sheeting shall be polyethylene, new and a minimum of 0.33 mm thickness.

## **INSTALLATION**

Fabric or plastic sheeting shall be placed and anchored as shown on the plans. Abutting edges shall overlap a minimum of 0.6m. A weight such as rock bags shall be placed on the overlap area at a maximum spacing of 2.4m. At the Contractor's option and upon approval of the Engineer, staples or wooden lath and anchors may be used for anchoring the temporary cover. The Contractor shall submit details for any alternative anchoring system to the Engineer for approval prior to installation. Non-abutting edges shall be embedded a minimum of 150 mm in native soil.

Temporary cover damaged as a result of the Contractors operations shall be replaced by the Contractor at his expense.

## **MEASUREMENT AND PAYMENT**

Full compensation for temporary cover shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

### **10-1.11 TEMPORARY DRAINAGE INLET PROTECTION**

Temporary drainage inlet protection shall be installed, maintained and later removed as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Temporary drainage inlet protection shall be limited to those areas that are not adjacent to, nor drain toward, areas of active traffic.

The Contractor shall select the appropriate drainage inlet protection shown on the plans commensurate to the field condition around the drainage inlet. For all other drainage inlets within the project limits that do not conform to the details shown on the plans, the Contractor shall submit to the Engineer for approval, provisions for providing temporary drainage inlet protection.

Special attention shall be given to existing and new drainage inlets adjacent to traffic. The Engineer shall review the need for drainage inlet protection commensurate to each location. Any proposed drainage inlet protection in such cases shall be approved by the Engineer for safety related concerns.

Throughout the duration of the contract, the Contractor shall be required to provide protection commensurate with the changing condition of the drainage inlet. It is recognized that the drainage inlet changes during the course of construction and the actual protection provided may require selecting the appropriate type or types of drainage inlet protection as it changes during the course of construction.

Some conditions may require combining materials outlined in the special provision to address conditions that cannot be accounted for at this time. The Contractor shall submit temporary drainage inlet protection drawings for such cases to the Engineer for approval prior to installation.

The Contractor shall use temporary drainage inlet protection as one of the various measures to prevent water pollution. The Storm Water Pollution Prevention Plan shall graphically show the use of temporary drainage inlet protection in relation to other water pollution control work specified elsewhere in these special provisions.

## **MATERIALS**

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions.

- A. **SILT FENCE.**—Sedimentation control fabric for temporary silt fence shall be a prefabricated silt fence with a minimum woven polypropylene fabric width of 900 mm and a minimum tensile strength of 0.44-kN, conforming to ASTM Designation: D 4632.
- B. **ROCK BAG.**— Rock bag fabric shall be non-woven polypropylene, with a minimum unit weight of 250 g/m<sup>2</sup>. The fabric shall have a mullen burst strength of at least 2500 kPa, per ASTM Designation: D3786 and an ultraviolet (UV) stability exceeding 70 percent at 500 hours.

Rock bags shall have a length of 600 mm to 800 mm, width of 400 mm to 500 mm, thickness of 150 mm to 200 mm, and be capable of containing a weighted mass of 13 kg to 22 kg.

Rock bag fill material shall be non-cohesive gravel, free from deleterious material. Rock bags shall be filled and the opening secured such that rock shall not escape from the bag.

- C. **EROSION CONTROL BLANKET.**—Erosion control blanket shall consist of straw and coconut or wood excelsior blanket secured in place with wire staples and shall conform to one of the following:
- D. **EXCELSIOR BLANKET.**—Excelsior blanket material shall consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 150 mm or longer. The erosion control blanket shall be of consistent thickness and the wood fiber shall be evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with an extruded plastic mesh. The blanket shall be smolder resistant without the use of chemical additives and shall be non-toxic and non-injurious to plant and animal life. Erosion control blanket shall be furnished in rolled strips, 1220 mm -2440 mm in width, and shall have an average mass of 0.5-kg/m<sup>2</sup>, ± 10 percent, at the time of manufacture.
- E. **STRAW AND COCONUT BLANKET.**—Straw and coconut blanket shall be machine produced mats of straw and coconut with a light weight netting on top. The straw and coconut shall be adhered to the netting with biodegradable thread or glue strip. The straw and coconut erosion control blanket shall be of consistent thickness with the straw and coconut evenly distributed over the entire area of the blanket. Straw and coconut erosion control blanket shall be furnished in rolled strips with a minimum width of 1.8 meters, minimum length of 20 meters (± 1 meter) and a minimum mass of 0.27-kg/m<sup>2</sup>.
- F. **STAPLES.**—Staples for erosion control blankets shall be made of 11-gage minimum steel wire and shall conform to the dimensions shown on the plans.

## **INSTALLATION AND MAINTENANCE**

Temporary rock bag dike consisting of filled rock bags placed in multiple layers shall be installed as shown on the plans.

When no longer required for the purpose, as determined by the Engineer, temporary drainage inlet protection facilities shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work.

Temporary drainage inlet protection damaged due to storms or as a result of the Contractor's operations shall be replaced at the Contractor's expense.

## **MEASUREMENT AND PAYMENT**

Full compensation for temporary drainage inlet protection shall be considered as included in the contract lump sum price paid for water pollution control and no separate payment will be made therefor.

### 10-1.12 COOPERATION

Attention is directed to Section 7-1.14, "Cooperation," and Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications and these special provisions.

It is anticipated that work by another contractor (Contract No.04-013014) to construct suspension bridge and east approach in Solano County on Route 80 from east of Crockett to east of Route 29/80 Separation (KP 13.8 to KP14.7) may be in progress adjacent to or within the limits of this project during progress of the work on this contract.

It is anticipated that work by another contractor (Contract No. 04-013054) to construct interchange and west approach to suspension bridge in Contra Costa and Solano Counties on Route 80 from west of Crockett to east of Route 80/29 Separation (KP 12.7 to KP13.8 in Contra Costa County, and KP 0.3 to KP 2.2 in Solano County) may be in progress adjacent to or within the limits of this project during progress of the work on this contract.

It is anticipated that work by another contractor (Contract No. 04-043934) to rehabilitate eastbound bridge in Contra Costa and Solano Counties on Route 80 from Crockett to west of Route 29 Separation (KP 12.8 to KP14.7 in Contra Costa County, and KP 0.0 to KP 0.6 in Solano County) may be in progress adjacent to or within the limits of this project during progress of the work on this contract.

It is anticipated that work by another contractor (Contract No. 04-0C2704) to resurface roadway in Solano County on Route 780 from Route 680 Separation to Lemon Street (KP 0.7 to KP7.4) may be in progress adjacent to or within the limits of this project during progress of the work on this contract.

### 10-1.13 PROGRESS SCHEDULE (CRITICAL PATH METHOD)

The Contractor shall submit to the Engineer practicable critical path method (CPM) progress schedules in conformance with these special provisions. Whenever the term "schedule" is used in this section it shall mean CPM progress schedule.

Attention is directed to "Payments" of Section 5 of these special provisions.

The provisions in Section 8-1.04, "Progress Schedule," of the Standard Specifications shall not apply.

#### DEFINITIONS

The following definitions shall apply to this section:

- A. **ACTIVITY.**—A task, event or other project element on a schedule that contributes to completing the project. Activities have a description, start date, finish date, duration and one or more logic ties.
- B. **BASELINE SCHEDULE.**—The initial schedule representing the Contractor's work plan on the first working day of the project.
- C. **CONTRACT COMPLETION DATE.**—The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer in conformance with the provisions in Section 8-1.06, "Time of Completion," of the Standard Specifications.
- D. **CRITICAL PATH.**—The longest continuous chain of activities for the project that has the least amount of total float of all chains. In general, a delay on the critical path will extend the scheduled completion date.
- E. **CRITICAL PATH METHOD (CPM).**—A network based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire project.
- F. **DATA DATE.**—The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."
- G. **EARLY COMPLETION TIME.**—The difference in time between an early scheduled completion date and the contract completion date.
- H. **FLOAT.**—The difference between the earliest and latest allowable start or finish times for an activity.
- I. **MILESTONE.**—An event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.
- J. **NARRATIVE REPORT.**—A document submitted with each schedule that discusses topics related to project progress and scheduling.
- K. **NEAR CRITICAL PATH.**—A chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.
- L. **SCHEDULED COMPLETION DATE.**—The planned project finish date shown on the current accepted schedule.
- M. **STATE OWNED FLOAT ACTIVITY.**—The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.
- N. **TIME IMPACT ANALYSIS.**—A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.
- O. **TOTAL FLOAT.**—The amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.
- P. **UPDATE SCHEDULE.**—A current schedule developed from the baseline or subsequent schedule through regular monthly review to incorporate as-built progress and any planned changes.



## GENERAL REQUIREMENTS

The Contractor shall submit to the Engineer baseline, monthly update and final update schedules, each consistent in all respects with the time and order of work requirements of the contract. The project work shall be executed in the sequence indicated on the current accepted schedule.

Schedules shall show the order in which the Contractor proposes to carry out the work with logical links between time-scaled work activities, and calculations made using the critical path method to determine the controlling operation or operations. The Contractor is responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

The Contractor shall produce schedules using computer software and shall furnish compatible software for the Engineer's exclusive possession and use. The Contractor shall furnish network diagrams, narrative reports, tabular reports and schedule data as parts of each schedule submittal.

Schedules shall include, but not be limited to, activities that show the following that are applicable to the project:

- A. Project characteristics, salient features, or interfaces, including those with outside entities, that could affect time of completion.
- B. Project start date, scheduled completion date and other milestones.
- C. Work performed by the Contractor, subcontractors and suppliers.
- D. Submittal development, delivery, review and approval, including those from the Contractor, subcontractors and suppliers.
- E. Procurement, delivery, installation and testing of materials, plants and equipment.
- F. Testing and settlement periods.
- G. Utility notification and relocation.
- H. Erection and removal of falsework and shoring.
- I. Major traffic stage switches.
- J. Finishing roadway and final cleanup.
- K. State-owned float as the predecessor activity to the scheduled completion date.

Schedules shall have not less than 50 and not more than 500 activities, unless otherwise authorized by the Engineer. The number of activities shall be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.

Schedule activities shall include the following:

- A. A clear and legible description.
- B. Start and finish dates.
- C. A duration of not less than one working day, except for event activities, and not more than 20 working days, unless otherwise authorized by the Engineer.
- D. At least one predecessor and one successor activity, except for project start and finish milestones.
- E. Required constraints.
- F. Codes for responsibility, stage, work shifts, location and contract pay item numbers.

The Contractor may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time shall be considered a resource for the exclusive use of the Contractor. The Contractor may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently or by completing activities earlier than planned. The Contractor may also submit for approval a cost reduction incentive proposal in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications that will reduce time of construction.

The Contractor may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. The Contractor shall provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

State-owned float shall be considered a resource for the exclusive use of the State. The Engineer may accrue State-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. The Contractor shall prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action in conformance with the provisions in "Time Impact Analysis" specified herein. The Engineer will document State-owned float by directing the Contractor to update the State-owned float activity on the next update schedule. The Contractor shall include a log of the action on the State-owned float activity and include a discussion of the action in the narrative report. The Engineer may use State-owned float to mitigate past, present or future State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date, in conformance with the provisions in Section 4-1.03, "Changes," of the Standard Specifications. The Contractor shall prepare a time impact analysis to determine the effect of the change in conformance with the provisions in "Time Impact Analysis" specified herein, and shall include the impacts acceptable to the Engineer in the next update schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed one or more working days because of the ordered change.

The Engineer's review and acceptance of schedules shall not waive any contract requirements and shall not relieve the Contractor of any obligation thereunder or responsibility for submitting complete and accurate information. Schedules that are rejected shall be corrected by the Contractor and resubmitted to the Engineer within 5 working days of notification by the Engineer, at which time a new review period of one week will begin.

Errors or omissions on schedules shall not relieve the Contractor from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either the Contractor or the Engineer discover that any aspect of the schedule has an error or omission, it shall be corrected by the Contractor on the next update schedule.

### **COMPUTER SOFTWARE**

The Contractor shall submit to the Engineer for approval a description of proposed software before delivery. The software shall be the current version of Primavera SureTrak Project Manager for Windows, or equal, and shall be compatible with Windows NT (version 4.0) operating system. If software other than SureTrak is proposed, it shall be capable of generating files that can be imported into SureTrak.

The Contractor shall furnish schedule software and all original software instruction manuals to the Engineer with submittal of the baseline schedule. The furnished schedule software shall become the property of the State and will not be returned to the Contractor. The State will compensate the Contractor in conformance with the provisions in Section 4-1.03, "Extra Work," of the Standard Specifications for replacement of software which is damaged, lost or stolen after delivery to the Engineer.

The Contractor shall instruct the Engineer in the use of the software and provide software support until the contract is accepted. Within 20 working days of contract approval, the Contractor shall provide a commercial 8-hour training session for 2 Department employees in the use of the software at a location acceptable to the Engineer. It is recommended that the Contractor also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software. If software other than SureTrak is furnished, then the training session shall be a total of 16-hours for each Department employee.

### **NETWORK DIAGRAMS, REPORTS AND DATA**

The Contractor shall include the following for each schedule submittal:

- A. Two sets of originally plotted, time-scaled network diagrams.
- B. Two copies of a narrative report.
- C. Two copies of each of 3 sorts of the CPM software-generated tabular reports.
- D. One 1.44-megabyte 90 mm (3.5 inch) floppy diskette containing the schedule data.

The time-scaled network diagrams shall conform to the following:

- A. Show a continuous flow of information from left to right.
- B. Be based on early start and early finish dates of activities.
- C. Clearly show the primary paths of criticality using graphical presentation.
- D. Be prepared on E-size sheets, 860 mm x 1120 mm (34 inch x 44 inch).
- E. Include a title block and a timeline on each page.

The narrative report shall be organized in the following sequence with all applicable documents included:

- A. Contractor's transmittal letter.
- B. Work completed during the period.
- C. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours.
- D. Description of the current critical path.

- E. Changes to the critical path and scheduled completion date since the last schedule submittal.
- F. Description of problem areas.
- G. Current and anticipated delays:

- 1. Cause of delay.
- 2. Impact of delay on other activities, milestones and completion dates.
- 3. Corrective action and schedule adjustments to correct the delay.

H. Pending items and status thereof:

- 1. Permits
- 2. Change orders
- 3. Time adjustments
- 4. Non-compliance notices

I. Reasons for an early or late scheduled completion date in comparison to the contract completion date.

Tabular reports shall be software-generated and provide information for each activity included in the project schedule. Three different reports shall be sorted by (1) activity number, (2) early start and (3) total float. Tabular reports shall be 215 mm x 280 mm (8 1/2 inch x 11 inch) in size and shall include, as a minimum, the following applicable information:

- A. Data date
- B. Activity number and description
- C. Predecessor and successor activity numbers and descriptions
- D. Activity codes
- E. Scheduled, or actual and remaining durations (work days) for each activity
- F. Earliest start (calendar) date
- G. Earliest finish (calendar) date
- H. Actual start (calendar) date
- I. Actual finish (calendar) date
- J. Latest start (calendar) date
- K. Latest finish (calendar) date
- L. Free float (work days)
- M. Total float (work days)
- N. Percentage of activity complete and remaining duration for incomplete activities.
- O. Lags
- P. Required constraints

Schedule submittals will only be considered complete when all documents and data have been provided as described above.

### **PRE-CONSTRUCTION SCHEDULING CONFERENCE**

The Contractor shall schedule and the Engineer will conduct a pre-construction scheduling conference with the Contractor's project manager and construction scheduler within 10 working days of the approval of the contract. At this meeting the Engineer will review the requirements of this section of the special provisions with the Contractor.

The Contractor shall submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and shall be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of these special provisions. If the Contractor proposes deviations to the construction staging of the project, then the general time-scaled logic diagram shall also display the deviations and resulting time impacts. The Contractor shall be prepared to discuss the proposal.

At this meeting, the Contractor shall additionally submit the alphanumeric coding structure and the activity identification system for labeling the work activities. To easily identify relationships, each activity description shall indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor or mainline.

The Engineer will review the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to the Contractor for implementation.

## **BASELINE SCHEDULE**

Beginning the week following the pre-construction scheduling conference, the Contractor shall meet with the Engineer weekly until the baseline schedule is accepted by the Engineer to discuss schedule development and resolve schedule issues.

The Contractor shall submit to the Engineer a baseline schedule within 20 working days of approval of the contract. The Contractor shall allow 3 weeks for the Engineer's review after the baseline schedule and all support data are submitted. In addition, the baseline schedule submittal will not be considered complete until the computer software is delivered and installed for use in review of the schedule.

The baseline schedule shall include the entire scope of work and how the Contractor plans to complete all work contemplated. The baseline schedule shall show the activities that define the critical path. Multiple critical paths and near-critical paths shall be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities shall be critical or near critical, unless otherwise authorized by the Engineer.

The baseline schedule shall not extend beyond the number of working days specified in these special provisions. The baseline schedule shall have a data date of the first working day of the contract and not include any completed work to date. The baseline schedule shall not attribute negative float or negative lag to any activity.

If the Contractor submits an early completion baseline schedule that shows contract completion in less than 85 percent of the working days specified in these special provisions, the baseline schedule shall be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations shall be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for the Contractor and subcontractors. The Contractor shall use average composite crews to display the labor loading of on-site construction activities. The Contractor shall optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The time-scaled resource histograms shall show labor crafts and equipment classes to be utilized on the contract. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

## **UPDATE SCHEDULE**

The Contractor shall submit an update schedule and meet with the Engineer to review contract progress, on or before the first day of each month, beginning one month after the baseline schedule is accepted. The Contractor shall allow 2 weeks for the Engineer's review after the update schedule and all support data are submitted, except that the review period shall not start until the previous month's required schedule is accepted. Update schedules that are not accepted or rejected within the review period will be considered accepted by the Engineer.

The update schedule shall have a data date of the twenty-first day of the month or other date established by the Engineer. The update schedule shall show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete and finish dates shall be shown as applicable. Durations for work that has been completed shall be shown on the update schedule as the work actually occurred, including Engineer submittal review and Contractor resubmittal times.

The Contractor may include modifications such as adding or deleting activities or changing activity constraints, durations or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. The Contractor shall state in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then the Contractor shall submit a time impact analysis as described herein.

## **TIME IMPACT ANALYSIS**

The Contractor shall submit a written time impact analysis (TIA) to the Engineer with each request for adjustment of contract time, or when the Contractor or Engineer consider that an approved or anticipated change may impact the critical path or contract progress.

The TIA shall illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis shall use the accepted schedule that has a data date closest to and prior to the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions prior to the event, the accepted schedule shall be updated to the day before the event being analyzed. The TIA shall include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules shall be equal to the adjustment of contract time. The Engineer may construct and utilize an appropriate project schedule or other recognized method to determine adjustments in contract time until the Contractor provides the TIA.

The Contractor shall submit a TIA in duplicate within 15 working days of receiving a written request for a TIA from the Engineer. The Contractor shall allow the Engineer 2 weeks after receipt to approve or reject the submitted TIA. All approved TIA schedule changes shall be shown on the next update schedule.

If a TIA submitted by the Contractor is rejected by the Engineer, the Contractor shall meet with the Engineer to discuss and resolve issues related to the TIA. If agreement is not reached, the Contractor will be allowed 15 days from the meeting with the Engineer to give notice in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications. The Contractor shall only show actual as-built work, not unapproved changes related to the TIA, in subsequent update schedules. If agreement is reached at a later date, approved TIA schedule changes shall be shown on the next update schedule. The Engineer will withhold remaining payment on the schedule contract item if a TIA is requested by the Engineer and not submitted by the Contractor within 15 working days. The schedule item payment will resume on the next estimate after the requested TIA is submitted. No other contract payment will be retained regarding TIA submittals.

### **FINAL UPDATE SCHEDULE**

The Contractor shall submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. The Contractor shall provide a written certificate with this submittal signed by the Contractor's project manager and an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

### **RETENTION**

The Department will retain an amount equal to 25 percent of the estimated value of the work performed during each estimate period in which the Contractor fails to submit an acceptable schedule conforming to the requirements of these special provisions as determined by the Engineer. Schedule retentions will be released for payment on the next monthly estimate for partial payment following the date that acceptable schedules are submitted to the Engineer or as otherwise specified herein. Upon completion of all contract work and submittal of the final update schedule and certification, any remaining retained funds associated with this section, "Progress Schedule (Critical Path Method)", will be released for payment. Retentions held in conformance with this section shall be in addition to other retentions provided for in the contract. No interest will be due the Contractor on retention amounts.

### **PAYMENT**

Progress schedule (critical path method) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path method) shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, including computer software, and for doing all the work involved in preparing, furnishing, and updating schedules, and instructing and assisting the Engineer in the use of computer software, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for the progress schedule (critical path method) contract item will be made progressively as follows:

- A. A total of 25 percent of the item amount or a total of 25 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon achieving all of the following:
  - 1. Completion of 5 percent of all contract item work.
  - 2. Acceptance of all schedules and TIAs required to the time when 5 percent of all contract item work is complete.
  - 3. Delivery of schedule software to the Engineer.
  - 4. Completion of required schedule software training.
- B. A total of 50 percent of the item amount or a total of 50 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and TIAs required to the time when 25 percent of all contract item work is complete.
- C. A total of 75 percent of the item amount or a total of 75 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and TIAs required to the time when 50 percent of all contract item work is complete.
- D. A total of 100 percent of the item amount or a total of 100 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of all contract item work, acceptance of all schedules and TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If the Contractor fails to complete any of the work or provide any of the schedules required by this section, the Engineer shall make an adjustment in compensation in conformance with the provisions in Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in furnishing schedules.

#### **10-1.14 OVERHEAD**

Overhead shall conform to these special provisions. The Contractor will be compensated for time-related overhead in conformance with these special provisions.

Attention is directed to "Force Account Payment" and "Progress Schedule (Critical Path Method)" of these special provisions.

The provisions in Section 9-1.08, "Adjustment of Overhead Costs," of the Standard Specifications shall not apply.

Time-related overhead shall consist of those overhead costs, including field and home office overhead, that are in proportion to the time required to complete the work. Time-related overhead shall not include costs that are not related to time, including but not limited to, mobilization, licenses, permits, and any other charges incurred only once during the contract.

Field office overhead expenses include time-related costs associated with the normal and recurring operations of the construction project, and shall not include costs directly attributable to any of the work of the contract. Such time-related costs include, but are not limited to, the salaries and benefits of project managers, general superintendents, field office managers and other field office staff assigned to the project, and rent, utilities, maintenance, security, supplies and equipment costs of the project field office.

Home office overhead or general and administrative expenses refer to the fixed costs of operating the Contractor's business. These costs include, but are not limited to, general administration, insurance, personnel and subcontract administration, purchasing, accounting, and project engineering and estimating. The rate of home office overhead shall exclude expenses specifically related to other contracts or other businesses of the Contractor, equipment coordination, material deliveries, and consultant and legal fees.

The quantity of time-related overhead to be paid will be measured by the working day, as specified in the Engineer's Estimate as WDAY. The estimated amount will be based on the number of working days, excluding any days for plant establishment, as specified in "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions. In the event an early completion progress schedule, as defined in "Progress Schedule (Critical Path Method)" of these special provisions, is submitted by the Contractor and approved by the Engineer, the quantity of time-related overhead eligible for payment will be based on the total number of working days as specified in "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions, rather than the Contractor's early completion progress schedule. The quantity of time-related overhead, as measured above, will be adjusted only as a result of suspensions and adjustments of time which revise the current contract completion date and which are also any of the following:

- A. Suspensions of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications, except:
  - 1. Suspensions ordered due to weather conditions being unfavorable for the suitable prosecution of the controlling operation or operations; or
  - 2. Suspensions ordered due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the contract; or
  - 3. Any other suspensions mutually agreed upon between the Engineer and the Contractor.
- B. Extensions of time granted by the State in conformance with the provisions in the fifth paragraph in Section 8-1.07, "Liquidated Damages," of the Standard Specifications; or
- C. Reductions in contract time set forth in approved contract change orders, in conformance with the provisions in Section 4-1.03, "Changes," of the Standard Specifications.

In the event a cost reduction proposal is submitted by the Contractor, and is subsequently approved by the Engineer, which provides for a reduction in contract time, the contract amount of time-related overhead associated with the reduction in contract time shall be considered as a net savings in the total cost of time-related overhead. The Contractor will be paid 50 percent of the estimated net savings of the time-related overhead, in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

If the quantity of time-related overhead, measured as specified in this special provision, exceeds 149 percent of the number of working days specified in the Engineer's Estimate, the Contractor shall, within 60 days of the Engineer's written request, submit to the Engineer an audit examination and report performed by an independent Certified Public Accountant of the Contractor's actual overhead costs. The independent Certified Public Accountant's audit examination shall be performed

in conformance with the requirements of the American Institute of Certified Public Accountants Attestation Standards. The audit examination and report shall depict the Contractor's project and company-wide financial records and shall specify the actual overall average daily rates for both field and home office overhead for the entire duration of the project, and whether the costs have been properly allocated. The rates of field and home office overhead shall exclude all unallowable costs as determined in the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31. The audit examination shall determine if the rates of field and home office overhead:

- A. Are allowable in conformance with the requirements of the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31;
- B. Are adequately supported by reliable documentation; and
- C. Related solely to the project under examination.

Upon the Engineer's written request, the Contractor shall make its financial records available for audit by the State for the purpose of verifying the actual rate of time-related overhead specified in the audit submitted by the Contractor. The actual rate of time-related overhead specified in the audit, submitted by the Contractor, will be subject to approval by the Engineer.

If the Engineer elects, or if requested in writing by the Contractor, contract item payments for time-related overhead, in excess of 149 percent of the number of working days designated in the Engineer's Estimate, will be adjusted to reflect the actual rate.

The cost of performing an audit examination and submitting the report, requested by the Engineer, will be borne equally by the State and the Contractor. The division of the cost will be made by determining the cost of providing an audit examination in conformance with the provisions of Section 9-1.03B, "Work performed by Special Forces or Other Special Services" of the Standard Specifications, and paying to the Contractor one-half of that cost.

The contract price paid per working day for time-related overhead shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in time-related overhead, complete in place, including all field and home office overhead costs incurred by the Contractor and by any joint venture partner, subcontractor, supplier or other party associated with the Contractor, and the Contractor's share of costs of audits of overhead costs requested by the Engineer, as specified in these special provisions, and as directed by the Engineer. The provisions in Sections 4-1.03B, "Increased or Decreased Quantities," 4-1.03C, "Changes in Character of the Work," of the Standard Specifications shall not apply to time-related overhead.

Full compensation for additional overhead costs involved in the performance of extra work at force account shall be considered as included in the markups specified in "Force Account Payment," of these special provisions.

Full compensation for additional overhead cost involved in performing additional contract item work that is not a controlling operation and for all overhead, other than the time-related overhead measured and paid for as specified in this section "Overhead", shall be considered as included in the various items of work involved, and no additional compensation will be allowed therefor.

For the purpose of making partial payments pursuant to the provisions in Section 9-1.06, "Partial Payments," of the Standard Specifications, the number of working days to be paid for time-related overhead in each monthly partial payment will be the number of working days, specified above to be measured for payment, that occurred during that monthly estimate period. The amount earned per working day for time-related overhead shall be either the contract item price, or 20 percent of the original total contract amount divided by the number of working days specified in "Beginning of Work, Time of Completion and Liquidated Damages," of these special provisions, whichever is the lesser.

After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount of the total contract item price for time-related overhead not yet paid, will be included for payment in the first estimate made after acceptance of the contract in conformance with the provisions in Section 9-1.07, "Payment After Acceptance," of the Standard Specifications.

#### **10-1.15 OBSTRUCTIONS**

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work

close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

| Notification Center                                 | Telephone Number                 |
|---|----------------------------------|
| Underground Service Alert-Northern California (USA) | 1-800-642-2444<br>1-800-227-2600 |
| Underground Service Alert-Southern California (USA) | 1-800-422-4133<br>1-800-227-2600 |

Installation of the following utility facilities will require coordination with the Contractor's operations. The Contractor shall make the necessary arrangements with the utility company, through the Engineer, and shall submit a schedule of work, verified by a representative of the utility company, to the Engineer. The schedule of work shall provide not less than the following number of working days, as defined in Section 8-1.06, "Time of Completion," of the Standard Specifications for the utility company to complete their work:

| Utility (address) | Location           | Working Days |
|-------------------|--------------------|--------------|
| PG&E              | MD 4+33 10m right  | 10           |
| PG&E              | MD 4+33 28m right  | 10           |
| PG&E              | MD 4+40 20 m right | 10           |

In the event that the utility facilities mentioned above are not removed or relocated by the date specified and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by the date specified, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

#### **10-1.16 MOBILIZATION**

Mobilization shall conform to the provisions in Section 11, "Mobilization," of the Standard Specifications.

#### **10-1.17 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES**

Flagging, signs, and all other traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Category 1 traffic control devices are defined as those devices that are small and lightweight (less than 45 kg), and have been in common use for many years. The devices shall be known to be crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 traffic control devices. Self-certification shall be provided by the manufacturer or Contractor and shall include the following: date, Federal Aid number (if applicable), expenditure authorization, district, county, route and kilometer post of project limits; company name of certifying vendor, street address, city, state and zip code; printed name, signature and title of certifying person; and an indication of which Category 1 traffic control devices will be used on the project. The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 traffic control devices are defined as those items that are small and lightweight (less than 45 kg), that are not expected to produce significant vehicular velocity change, but may otherwise be potentially hazardous. Category 2 traffic control devices include: barricades and portable sign supports.

Category 2 devices purchased on or after October 1, 2000 shall be on the Federal Highway Administration (FHWA) Acceptable Crashworthy Category 2 Hardware for Work Zones list. This list is maintained by FHWA and can be located at the following internet address: <http://safety.fhwa.dot.gov/fourthlevel/hardware/listing.cfm?code=workzone>. The Department maintains a secondary list at the following internet address: <http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/files.htm>.

Category 2 devices that have not received FHWA acceptance, and were purchased before October 1, 2000, may continue to be used until they complete their useful service life or until January 1, 2003, whichever comes first. Category 2 devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer by the start of the project. The label shall be readable. After January 1, 2003, all Category 2 devices without a label shall not be used on the project.



If requested by the Engineer, the Contractor shall provide a written list of Category 2 devices to be used on the project at least 5 days prior to beginning any work using the devices. For each type of device, the list shall indicate the FHWA acceptance letter number and the name of the manufacturer.

Full compensation for providing self-certification for crashworthiness of Category 1 traffic control devices and for providing a list of Category 2 devices used on the project and labeling Category 2 devices as specified shall be considered as included in the prices paid for the various contract items of work requiring the use of the Category 1 or Category 2 traffic control devices and no additional compensation will be allowed therefor.

#### **10-1.18 CONSTRUCTION AREA SIGNS**

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Type II retroreflective sheeting shall not be used on construction area sign panels.

Attention is directed to "Construction Project Information Signs" of these special provisions regarding the number and type of construction project information signs to be furnished, erected, maintained, and removed and disposed of.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

| Notification Center                                 | Telephone Number                 |
|---|----------------------------------|
| Underground Service Alert-Northern California (USA) | 1-800-642-2444<br>1-800-227-2600 |
| Underground Service Alert-Southern California (USA) | 1-800-422-4133<br>1-800-227-2600 |

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.

Sign substrates for stationary mounted construction area signs may be fabricated from fiberglass reinforced plastic as specified under "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

#### **10-1.19 MAINTAINING TRAFFIC**

Attention is directed to Sections 7-1.08, "Public Convenience," 7-1.09, "Public Safety," and 12, "Construction Area Traffic Control Devices," of the Standard Specifications and to the provisions in "Public Safety" of these special provisions and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.09.

Lane closures shall conform to the provisions in section "Traffic Control System for Lane Closure" of these special provisions.

Personal vehicles of the Contractor's employees shall not be parked within the right of way.

The Contractor shall notify local authorities of the Contractor's intent to begin work at least 5 days before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make arrangements relative to keeping the working area clear of parked vehicles.

Whenever vehicles or equipment are parked on the shoulder within 1.8 m of a traffic lane, the shoulder area shall be closed as shown on the plans.

Lanes shall be closed only during the hours shown on the charts included in this section "Maintaining Traffic." Except work required under Sections 7-1.08 and 7-1.09, work that interferes with public traffic shall be performed only during the hours shown for lane closures.

No two consecutive ramps may be closed at the same time.

Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor, if in the opinion of the Engineer, public traffic will be better served and the work expedited. These deviations shall not be adopted by the Contractor until the Engineer has approved the deviations in writing. All other modifications will be made by contract change order.

| Chart No 1<br>Multilane Lane Requirements                             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|--|
| Location: Route 80 – From 0.9 km west of Jct. Rte. 29 to Jct. Rte. 37 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| Direction: Westbound  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |  |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |  |
| Mondays through Thursdays   | 1    | 1 | 1 | 1 | 2 |   |   |   |   |   |    |    |      |   |   |   |   |   |   | 2 | 2 | 2 | 2  | 1  |  |
| Fridays   | 1    | 1 | 1 | 1 | 2 |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | 2 | 2 | 2  | 2  |  |
| Saturdays   | 1    | 1 | 1 | 1 | 1 | 2 | 2 | 2 |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |  |
| Sundays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |  |
| Day before designated legal holiday                                   | 1    | 1 | 1 | 1 | 2 |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | 2 | 2 | 2  | 2  |  |
| Designated legal holidays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |  |
| Legend:   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| 1 One lane open in direction of travel                                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| 2 Two adjacent lanes open in direction of travel                      |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| No lane closure allowed   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |
| REMARKS:  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |  |

(F=Sol-80-KP0.92/OT0501/6.99/97.3/B)

| Chart No 2<br>Multilane Lane Requirements                             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 – From 0.9 km west of Jct. Rte. 29 to Jct. Rte. 37 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Direction: Eastbound  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | 1    | 1 | 1 | 1 | 1 | 2 | 2 |   |   |   |    |    |      |   |   |   |   |   |   |   |   | 2 | 2  | 2  |    |
| Fridays   | 1    | 1 | 1 | 1 | 1 | 2 | 2 |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |    |
| Saturdays   | 2    | 1 | 1 | 1 | 1 | 1 | 2 | 2 |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |    |
| Sundays   | 2    | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |   |    |    |      |   |   |   |   |   |   |   |   | 2 | 2  | 2  |    |
| Day before designated legal holiday                                   | 1    | 1 | 1 | 1 | 1 | 2 | 2 |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 2  | 2  |    |
| Designated legal holidays   | 2    | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |   |    |    |      |   |   |   |   |   |   |   |   | 2 | 2  | 2  |    |
| Legend:   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div>1</div> One lane open in direction of travel                     |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div>2</div> Two adjacent lanes open in direction of travel           |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div></div> No lane closure allowed                                   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS:  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-KP0.92/OT0501/6.99/97.3/B)

| <b>Chart No. 1A</b>                                 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                       |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Eastbound Off-ramp to Route 29 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                           | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |    |
| Fridays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |    |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Day before designated legal holiday                 | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |    |
| Designated legal holidays                           | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic to the next off-ramp.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.0/R)

| <b>Chart No. 1B</b>                                  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                        |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Westbound On-ramp from Route 29 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                    | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                            | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Fridays  | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Day before designated legal holiday                  | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Designated legal holidays                            | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 1b.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.1/R)

| <b>Chart No. 2A</b>                                       |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Eastbound Off-ramp to Sequoia Avenue |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                 | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                       | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Designated legal holidays                                 | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |

Legend:

Ramp may be closed; detour traffic to the next off-ramp.

No ramp closure permitted.

REMARKS:

(F=Sol-80-KP 0.92/OT0501/9.99/96.1/R)

| <b>Chart No. 2B</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                                     |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Westbound On-ramp from Maritime Academy Road |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                               | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |

Legend:

Ramp may be closed; detour traffic as per DETOUR PLAN # 2b.

No ramp closure permitted.

REMARKS:

(F=Sol-80-KP 0.92/OT0501/9.99/96.1/R)

| <b>Chart No. 2C</b>   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                                     |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Westbound Off-ramp to Maritime Academy Drive |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Day before designated legal holiday                               | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |

**Legend:**

X Ramp may be closed; detour traffic to the Magazine Street westbound off-ramp.

No ramp closure permitted.

**REMARKS:** Portable changeable message signs shall be placed upstream of the Magazine Street westbound off-ramp.

(F=Sol-80-KP 0.92/OT0501/9.99/96.1/R)

| <b>Chart No. 3A</b>  |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                              |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Eastbound Off-ramp to Magazine Street |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                  | X    | X | X | X | X |   |   |   |   | X | X  | X    | X  | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X |   |   |   |   | X | X  | X    | X  | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X | X  | X    | X  | X |   |   |   |   | X | X | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X    | X  | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                        | X    | X | X | X | X |   |   |   |   | X | X  | X    | X  | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Designated legal holidays                                  | X    | X | X | X | X | X | X | X | X | X | X  | X    | X  | X | X | X | X | X | X | X | X | X | X  | X  | X  |

**Legend:**

X Ramp may be closed; detour traffic as per DETOUR PLAN # 3a.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 3B</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                               |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Eastbound On-ramp from Magazine Street |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Day before designated legal holiday                         | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Designated legal holidays                                   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |

**Legend:**

Ramp may be closed; detour traffic as per DETOUR PLAN # 3b.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 3C</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                               |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Westbound On-ramp from Magazine Street |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                   | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                         | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Designated legal holidays                                   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |

**Legend:**

Ramp may be closed; detour traffic as per DETOUR PLAN # 3c.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| Chart No. 3D<br>Ramp Lane Requirements                     |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 – Westbound Off-ramp to Magazine Street |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                  | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Day before designated legal holiday                        | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Designated legal holidays                                  | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X  | X  | X  |

Legend:

☒ Ramp may be closed; detour traffic to the next off-ramp.

☐ No ramp closure permitted.

REMARKS:

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| Chart No. 4A<br>Ramp Lane Requirements               |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 – EB Route 80/Route 780 Connector |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                    | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                            | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    | X  |
| Fridays  | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   |   | X  | X  | X  |
| Day before designated legal holiday                  | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    | X  |
| Designated legal holidays                            | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   |   | X  | X  | X  |

Legend:

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4a.

☐ No ramp closure permitted.

REMARKS:

| <b>Chart No. 4B</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                               |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –Segment EB Route 80 Off to EB Route 780 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Day before designated legal holiday                         | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                                   | X    | X | X | X | X | X | X | X | X | X | X  | X  |      |   |   |   |   |   | X | X | X | X | X  | X  | X  |

**Legend:**

X Ramp may be closed; detour traffic as per DETOUR PLAN # 4b.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4C</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                              |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –EB Route 80 Collector-Distributor Road |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                        | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                                  | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   | X | X | X | X | X | X  | X  | X  |

**Legend:**

X Ramp may be closed; detour traffic as per DETOUR PLAN # 4c.

No ramp closure permitted.

**REMARKS:** Segment EB Route 780 Off to EB Route 80 and Segment EB Route 80 Off to WB Route 780 to be closed simultaneously.

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)



| Chart No. 4D<br>Ramp Lane Requirements                        |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 - Segment EB Route 80 On from EB Route 780 |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                     | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  |      |    |   |   |   |   |   | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                           | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                                     | X    | X | X | X | X | X | X | X | X | X | X  |      |    |   |   |   |   |   | X | X | X | X | X  | X  | X  |

Legend:

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4d.

☐ No ramp closure permitted.

REMARKS:

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| Chart No. 4E<br>Ramp Lane Requirements                      |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 –Segment EB Route 80 Off to WB Route 780 |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Day before designated legal holiday                         | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                                   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   | X | X | X  | X  | X  |

Legend:

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4e.

☐ No ramp closure permitted.

REMARKS:

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4F</b>  |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                                |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –Segment EB Route 80 On from WB Route 780 |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |   | 10 | 11 | 12 |
| Mondays through Thursdays                                    | X    | X | X | X | X | X |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Fridays  | X    | X | X | X | X | X |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Saturdays  | X    | X | X | X | X | X | X | X |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Sundays  | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Day before designated legal holiday                          | X    | X | X | X | X | X |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Designated legal holidays                                    | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4f.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4G</b>                                      |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                            |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –EB Route 80 Connector from Route 780 |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |   | 10 | 11 | 12 |
| Mondays through Thursdays                                | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   | X  | X  |    |
| Fridays  | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   | X  | X  |    |
| Saturdays  | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    | X  |    |
| Sundays  | X    | X | X | X | X | X | X | X |   |   |    |      |    |   |   |   |   |   |   |   |   |   | X | X  | X  |    |
| Day before designated legal holiday                      | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   | X | X  |    |    |
| Designated legal holidays                                | X    | X | X | X | X | X | X | X |   |   |    |      |    |   |   |   |   |   |   |   |   | X | X | X  |    |    |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4g.

☐ No ramp closure permitted.

**REMARKS:** EB Traffic to Benicia Rd. off-ramp use next exit.  
 Segments EB Route 80 on from Route 780 to be closed simultaneously.  
 Segments from EB Route 80 Collector-Distributor Road to WB Route 780 to be opened.

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| Chart No. 4H<br>Ramp Lane Requirements  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 – WB Route 80 Connector from Route 780   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Fridays   | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Saturdays   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Day before designated legal holiday   | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Legend:   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div>X</div> Ramp may be closed; detour traffic as per DETOUR PLAN # 4h   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div></div> No ramp closure permitted.  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS: Segments to WB Route 80 from Route 780 to be closed simultaneously.<br>Segments from WB Route 80 Collector-Distributor Road to EB Route 780 to be opened.<br>Segments from Lincoln Road West on-ramp and off-ramp to be closed simultaneously. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-KP 0.92/OTO501/9.99/96.2/R)

| Chart No. 4I<br>Ramp Lane Requirements                                   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| Location: Route 80 –Segment WB Route 80 On from EB Route 780             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays  | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  |    |
| Fridays  | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  |    |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Day before designated legal holiday                                      | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  |    |
| Designated legal holidays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Legend:  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div>X</div> Ramp may be closed; detour traffic as per DETOUR PLAN # 4i. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| <div></div> No ramp closure permitted.                                   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS:   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4J</b>   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –WB Route 80 Collector-Distributor Road  |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |   | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   | X | X  | X  |    |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   | X  | X  |    |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   |   |   | X  | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Day before designated legal holiday   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   | X  | X  |    |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X |    |      |    |   |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Legend:<br><input checked="" type="checkbox"/> Ramp may be closed; detour traffic as per DETOUR PLAN # 4j.<br><input type="checkbox"/> No ramp closure permitted. |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS: Segment WB Route 780 to WB Route 80 and Segment WB Route 80 to EB Route 780 to be closed simultaneously.   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4K</b>   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|------|----|---|---|---|---|---|---|---|---|---|--|----|----|----|
| <b>Ramp Lane Requirements</b>   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    |    |    |
| Location: Route 80 –Segment WB Route 80 Off to EB Route 780   |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    |    |    |
| FROM HOUR TO HOUR   | a.m. |   |   |   |   |   |   |   |   |   |    | p.m. |    |   |   |   |   |   |   |   |   |   |  |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11   | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    | X  |    |
| Fridays   | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    | X  |    |
| Saturdays   | X    | X | X | X | X | X | X |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  | X  | X  |    |
| Day before designated legal holiday   | X    | X | X | X | X |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    | X  |    |
| Designated legal holidays   | X    | X | X | X | X | X | X | X |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  | X  | X  |    |
| Legend:<br><input checked="" type="checkbox"/> Ramp may be closed; detour traffic as per DETOUR PLAN # 4k.<br><input type="checkbox"/> No ramp closure permitted. |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    |    |    |
| REMARKS:  |      |   |   |   |   |   |   |   |   |   |    |      |    |   |   |   |   |   |   |   |   |   |  |    |    |    |

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4L</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –Segment WB Route 80 On from WB Route 780 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|  | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                    | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Day before designated legal holiday                          | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Designated legal holidays                                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4L.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4M</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                               |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 –Segment WB Route 80 Off to WB Route 780 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                                   | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   | X | X | X | X | X  | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   | X | X | X | X | X  | X  |    |
| Day before designated legal holiday                         | X    | X | X | X | X | X |   |   |   | X | X  | X  | X    |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Designated legal holidays                                   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   | X | X | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 4m.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4N</b>                                  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                        |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – WB Route 80/Route 780 Connector |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                    | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                            | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    | X  |
| Fridays  | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Saturdays  | X    | X | X | X | X | X | X | X |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Sundays  | X    | X | X | X | X | X | X | X |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    | X  |
| Day before designated legal holiday                  | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Designated legal holidays                            | X    | X | X | X | X | X | X | X |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    | X  |

**Legend:**

X Ramp may be closed; detour traffic as per DETOUR PLAN # 4n.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No. 4O</b>                                     |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                           |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Route 80 – Eastbound off-ramp to Benicia Road |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                       | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                               | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday                     | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   | X | X | X | X | X  | X  | X  |
| Designated legal holidays                               | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |

**Legend:**

X Ramp may be closed; detour traffic to the next off-ramp.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-KP 0.92/OT0501/9.99/96.2/R)

| <b>Chart No.5A</b>                           |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: EB Rte. 80 Off-Ramp to Georgia St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                            | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   | X | X | X | X  | X  |    |
| Fridays                                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   | X | X | X | X  | X  |    |
| Saturdays                                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X |   |   |   | X | X | X | X  | X  |    |
| Sundays                                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |
| Day before designated legal holiday          | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   | X | X | X | X  | X  |    |
| Designated legal holidays                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic to next off ramp.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM2.89/OT0501/9.99/96.3R)

| <b>Chart No. 5B</b>                           |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: EB Rte. 80 On-Ramp from Georgia St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                             | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                     | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Fridays                                       | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Saturdays                                     | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Sundays                                       | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   | X | X | X | X | X  | X  |    |
| Day before designated legal holiday           | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Designated legal holidays                     | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   | X | X | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; Detour traffic as per DETOUR PLAN # 5b.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM2.968/OT0501/9.99/96.3R)

| <b>Chart No. 5C</b>                           |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: WB Rte. 80 On-Ramp from Georgia St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                             | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                     | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Fridays                                       | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Saturdays                                     | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Sundays                                       | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Day before designated legal holiday           | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |
| Designated legal holidays                     | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   |   | X | X  | X  | X  |

**Legend:**

☒ Ramp may be closed. Detour traffic as per DETOUR PLAN # 5c.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM2.796/OT0501/9.99/96.3R)

| <b>Chart No. 5D</b>                          |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: WB Rte. 80 Off-Ramp to Georgia St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                            | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                    | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays                                      | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Saturdays                                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X |   |   |   | X | X | X | X  | X  | X  |
| Sundays                                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X |   |   |   | X | X | X | X  | X  | X  |
| Day before designated legal holiday          | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Designated legal holidays                    | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X |   |   |   | X | X | X | X  | X  | X  |

**Legend:**

☒ Ramp may be closed; detour traffic to next off-ramp.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM2.878/OT0501/9.99/96.3R)



| <b>CHART No. 6A</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|
| <b>Ramp Lane Requirements</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| Location: Eastbound - Route 80 - Off-ramp to Springs Rd. in Solano County. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| FROM HOUR TO HOUR  | A.M. |   |   |   |   |   |   |   |   |   |    |    | P.M. |   |   |   |   |   |   |   |   |   |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Mondays through Thursdays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |
| Fridays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |
| Day before designated legal holiday  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  |
| Designated legal holidays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  |

**Legend:**

X Ramp may be completely closed; detour traffic to the next off-ramp.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-PM0.5/OT0501/9.99/96.3/R)

| <b>CHART No. 6B</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|
| <b>Ramp Lane Requirements</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| Location: Eastbound - Route 80 - On-ramp from Springs Rd. in Solano County. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| FROM HOUR TO HOUR   | A.M. |   |   |   |   |   |   |   |   |   |    |    | P.M. |   |   |   |   |   |   |   |   |   |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Mondays through Thursdays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   | X | X | X | X | X | X  | X  |
| Day before designated legal holiday   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   | X | X | X | X | X | X  | X  |

**Legend:**

X Ramp may be completely closed; detour traffic as per DETOUR PLAN # 6b.

No ramp closure permitted.

**REMARKS:**

(F=Sol-80-PM0.5/OT0501/9.99/96.3/R)

| <b>CHART No. 6C</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Westbound - Route 80 - On-ramp from Springs Rd. in Solano County.   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|   | A.M. |   |   |   |   |   |   |   |   |   |    |    | P.M. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | X    | X | X | X | X |   |   |   |   | X | X  | X  | X    | X | X |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays   | X    | X | X | X | X |   |   |   |   | X | X  | X  |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Saturdays   | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Sundays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday   | X    | X | X | X | X |   |   |   |   | X | X  | X  |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Designated legal holidays   | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    |   |   | X | X | X | X | X | X | X | X  | X  | X  |
| <b>Legend:</b><br><div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block; margin-right: 5px;"></div> Ramp may be completely closed; detour traffic as per DETOUR PLAN # 6c. </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block; margin-right: 5px;"></div> No ramp closure permitted. </div> |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS:  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-PM0.5/OT0501/9.99/96.3/R)

| <b>CHART No. 6D</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Westbound - Route 80 - Off-ramp to Springs Rd. in Solano County.   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|  | A.M. |   |   |   |   |   |   |   |   |   |    |    | P.M. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X |   |   | X | X | X | X  | X  | X  |
| Day before designated legal holiday  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X |   |   |   | X | X | X | X  | X  | X  |
| <b>Legend:</b><br><div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block; margin-right: 5px;"></div> Ramp may be completely closed; detour traffic to the next off-ramp. </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 10px; display: inline-block; margin-right: 5px;"></div> No ramp closure permitted. </div> |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| REMARKS:   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |

(F=Sol-80-PM0.5/OT0501/9.99/96.3/R)

| <b>Chart No.7A</b>                             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: EB Rte. 80 Off-Ramp to Tennessee St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                              | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   |   | X | X | X  | X  |    |
| Fridays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   |   | X | X | X  | X  |    |
| Saturdays                                      | X    | X | X | X | X | X | X | X | X | X | X  | X  |      |   |   |   |   |   |   | X | X | X | X  | X  |    |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday            | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   |   |   | X | X | X  | X  |    |
| Designated legal holidays                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X  |

**Legend:**

☒ Ramp may be closed; detour traffic to next off-ramp.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM3.347/OT0501/9.99/96.3R)

| <b>Chart No. 7B</b>                             |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                   |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: EB Rte. 80 On-Ramp from Tennessee St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                               | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                       | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Fridays   | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    | X  |    |
| Saturdays                                       | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Sundays   | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |
| Day before designated legal holiday             | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    | X  |    |
| Designated legal holidays                       | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  |    |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 7b.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol080 PM3.370/OT0501/9.99/96.3R)

| <b>Chart No. 7C</b>                            |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: WB Rte. 80 Off-Ramp to Tennessee St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                              | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                      | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays                                      | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   | X | X | X | X | X  | X  | X  |
| Day before designated legal holiday            | X    | X | X | X | X | X | X |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                      | X    | X | X | X | X | X | X | X | X | X | X  | X  | X    | X |   |   |   |   | X | X | X | X | X  | X  | X  |

**Legend:**

☒ Ramp may be closed; detour traffic to next off-ramp.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM3.679/oTo5o1/9.99/96.3R)

| <b>Chart No. 7D</b>                                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|
| <b>Ramp Lane Requirements</b>                      |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| Location: WB Rte. 80 On-Ramp from WB Tennessee St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |
| FROM HOUR TO HOUR                                  | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |
|  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Mondays through Thursdays                          | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Fridays  | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X | X |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Day before designated legal holiday                | X    | X | X | X | X | X |   |   |   |   |    |    |      |   |   |   |   |   |   | X | X | X | X  | X  |
| Designated legal holidays                          | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   | X | X | X | X  | X  |

**Legend:**

☒ Ramp may be closed; detour traffic as per DETOUR PLAN # 7d.

☐ No ramp closure permitted.

**REMARKS:**

(F=Sol-80 PM3.420/OT0501/9.99/96/3R)

| <b>Chart No. 7E</b>                                |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|--|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Ramp Lane Requirements</b>                      |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: WB Rte. 80 On-Ramp from EB Tennessee St. |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|  | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR                                  | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays                          | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Fridays  | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Saturdays  | X    | X | X | X | X | X | X | X | X |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Sundays  | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Day before designated legal holiday                | X    | X | X | X | X |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |
| Designated legal holidays                          | X    | X | X | X | X | X | X | X | X | X | X  |    |      |   |   |   |   |   |   |   | X | X | X  | X  | X  |

Legend:

X

Ramp may be closed; detour traffic as per DETOUR PLAN # 7e.

No ramp closure permitted.

REMARKS:

(F=Sol-80 PM3.421/0T0501/9.99/96.3R)

| <b>Chart No. 8</b>  |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|---|------|---|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|---|----|----|----|
| <b>Connector Requirements</b>                                     |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
| Location: Eastbound - Route 80 - At Segment EB Connector to WB 37 |      |   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   |    |    |    |
|   | a.m. |   |   |   |   |   |   |   |   |   |    |    | p.m. |   |   |   |   |   |   |   |   |   |    |    |    |
| FROM HOUR TO HOUR   | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 |   |   |   |    |    |      |   |   |   |   |   |   |   |   | 1 | 1  | 1  | 1  |
| Fridays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 1  | 1  | 1  |
| Saturdays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   |    |    |      |   |   |   |   |   |   |   |   | 1 | 1  | 1  | 1  |
| Sundays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   |    |    |      |   |   |   |   |   |   |   |   | 1 | 1  | 1  | 1  |
| Day before designated legal holiday                               | 1    | 1 | 1 | 1 | 1 | 1 | 1 |   |   |   |    |    |      |   |   |   |   |   |   |   |   |   | 1  | 1  | 1  |
| Designated legal holidays   | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   |    |    |      |   |   |   |   |   |   |   |   | 1 | 1  | 1  | 1  |

Legend:

1

One connector lane may be closed.

No connector lane closure allowed

REMARKS:

Pedestrian access facilities shall be provided through construction areas within the right of way as shown on the plans and as specified herein. Pedestrian walkways shall be surfaced with asphalt concrete, portland cement concrete or timber. The surface shall be skid resistant and free of irregularities. Hand railings shall be provided on each side of pedestrian walkways as necessary to protect pedestrian traffic from hazards due to construction operations or adjacent vehicular traffic. Protective overhead covering shall be provided as necessary to insure protection from falling objects and drip from overhead structures.

At least one walkway shall be available at all times. If the Contractor's operations require the closure of one walkway, then another walkway shall be provided nearby, off the traveled roadway.

Railings shall be constructed of wood, S4S, and shall be painted white. Railings and walkways shall be maintained in good condition. Walkways shall be kept clear of obstructions.

Full compensation for providing pedestrian facilities shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

#### **10-1.20 CLOSURE REQUIREMENTS AND CONDITIONS**

Lane closures shall conform to the provisions in "Maintaining Traffic" of these special provisions and these special provisions.

The term closure, as used herein, is defined as the closure of a traffic lane or lanes, including ramp or connector lanes, within a single traffic control system.

#### **CLOSURE SCHEDULE**

By noon Monday, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Friday noon through the following Friday noon.

The Closure Schedule shall show the locations and times when the proposed closures are to be in effect. The Contractor shall use the Closure Schedule request forms furnished by the Engineer. Closure Schedules submitted to the Engineer with incomplete, unintelligible or inaccurate information will be returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Amendments to the Closure Schedule, including adding additional closures, shall be submitted to the Engineer, in writing, at least 3 working days in advance of a planned closure. Approval of amendments to the Closure Schedule will be at the discretion of the Engineer.

The Contractor shall confirm, in writing, all scheduled closures by no later than 8:00 a.m. 3 working days prior to the date on which the closure is to be made. Approval or denial of scheduled closures will be made no later than 4:00 p.m. 2 working days prior to the date on which the closure is to be made. Closures not confirmed or approved will not be allowed.

Confirmed closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer for the following working day.

#### **CONTINGENCY PLAN**

The Contractor shall prepare a contingency plan for reopening closures to public traffic. The Contractor shall submit the contingency plan for a given operation to the Engineer within one working day of the Engineer's request.

#### **LATE REOPENING OF CLOSURES**

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. The Contractor shall not make any further closures until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 working days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to any compensation for the suspension of work resulting from the late reopening of closures.

For each 10-minute interval, or fraction thereof past the time specified to reopen the closure, the Department will deduct \$3,100 per interval from moneys due or that may become due the Contractor under the contract.

#### **COMPENSATION**

The Contractor shall notify the Engineer of any delay in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09:

- A. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to any compensation for amendments to the Closure Schedule that are not approved.
- B. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure prior to the time designated in the approved Closure Schedule, any delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09.

#### **10-1.21 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE**

A traffic control system shall consist of closing traffic lanes and ramps in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these special provisions, and these special provisions.

The provisions in this section will not relieve the Contractor of responsibility for providing additional devices or taking measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

During traffic stripe operations and pavement marker placement operations using bituminous adhesive, traffic shall be controlled, at the option of the Contractor, with either stationary or moving lane closures. During other operations, traffic shall be controlled with stationary lane closures. Attention is directed to the provisions in Section 84-1.04, "Protection From Damage," and Section 85-1.06, "Placement," of the Standard Specifications.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

#### **STATIONARY LANE CLOSURE**

When lane and ramp closures are made for work periods only, at the end of each work period, components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, designated by the Engineer within the limits of the highway right of way.

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing the components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing the components when operated within a stationary type lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on the vehicles which are doing the placing, maintaining and removing of components of a traffic control system and shall be in place before a lane closure requiring the sign's use is completed.

#### **MOVING LANE CLOSURE**

Flashing arrow signs used in moving lane closures shall be truck-mounted. Changeable message signs used in moving lane closure operations shall conform to the provisions in Section 12-3.12, "Portable Changeable Message Signs," of the Standard Specifications, except the signs shall be truck-mounted and the full operation height of the bottom of the sign may be less than 2.1 m above the ground, but should be as high as practicable.

Truck-mounted attenuators (TMA) for use in moving lane closures shall be any of the following approved models, or equal:

- A. Hexfoam TMA Series 3000, Alpha 1000 TMA Series 1000 and Alpha 2001 TMA Series 2001, manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601-2076, Telephone (312) 467-6750.
  - 1. Distributor (Northern): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, Telephone 1-800-884-8274, FAX (916) 387-9734.
  - 2. Distributor (Southern): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805, Telephone 1-800-222-8274.
- B. Cal T-001 Model 2 or Model 3, manufacturer and distributor: Hexcel Corporation, 11711 Dublin Boulevard, P.O. Box 2312, Dublin, CA 94568, Telephone (510) 828-4200.

C. Renco Rengard Model Nos. CAM 8-815 and RAM 8-815, manufacturer and distributor: Renco Inc., 1582 Pflugerville Loop Road, P.O. Box 730, Pflugerville, TX 78660-0730, Telephone 1-800-654-8182.

Each TMA shall be individually identified with the manufacturer's name, address, TMA model number, and a specific serial number. The names and numbers shall each be a minimum 13 mm high and located on the left (street) side at the lower front corner. The TMA shall have a message next to the name and model number in 13 mm high letters which states, "The bottom of this TMA shall be \_\_\_\_\_ mm  $\pm$  \_\_\_\_\_ mm above the ground at all points for proper impact performance." Any TMA which is damaged or appears to be in poor condition shall not be used unless recertified by the manufacturer. The Engineer shall be the sole judge as to whether used TMAs supplied under this contract need recertification. Each unit shall be certified by the manufacturer to meet the requirements for TMA in conformance with the standards established by the Transportation Laboratory.

Approvals for new TMA designs proposed as equal to the above approved models shall be in conformance with the procedures (including crash testing) established by the Transportation Laboratory. For information regarding submittal of new designs for evaluation contact: Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, California 95819.

New TMAs proposed as equal to approved TMAs or approved TMAs determined by the Engineer to need recertification shall not be used until approved or recertified by the Transportation Laboratory.

## **PAYMENT**

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

## **10-1.22 TEMPORARY PAVEMENT DELINEATION**

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as reducing the minimum standards specified in the Manual of Traffic Controls published by the Department or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety," of the Standard Specifications.

## **GENERAL**

Whenever the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place prior to opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided at all times for traveled ways open to public traffic. On multilane roadways (freeways and expressways) edgeline delineation shall be provided at all times for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or marks. Surfaces to receive temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation.

Temporary pavement markers, including underlying adhesive, and removable traffic tape which are applied to the final layer of surfacing or existing pavement to remain in place or which conflicts with a subsequent or new traffic pattern for the area shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

## **TEMPORARY LANELINE AND CENTERLINE DELINEATION**

Whenever lanelines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown on the plans, the minimum laneline and centerline delineation to be provided for that area shall be temporary pavement markers placed at longitudinal intervals of not more than 7.3 m. The temporary pavement markers shall be the same color as the laneline or centerline the pavement markers replace. Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term



day/night use (6 months or less) in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. The temporary pavement markers shall be placed in conformance with the manufacturer's instructions. Temporary pavement markers for long term day/night use (6 months or less) shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place the temporary pavement markers in areas where removal of the temporary pavement markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary pavement markers listed for short term day/night use (14 days or less), shall be placed on longitudinal intervals of not more than 7.3 m and shall be used for a maximum of 14 days on lanes opened to public traffic. Prior to the end of the 14 days the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall replace the temporary pavement markers and provide additional temporary pavement delineation and shall bear the cost thereof. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers (including underlying adhesive, layout (dribble) lines to establish alignment of temporary pavement markers or used for temporary laneline and centerline delineation) for those areas where temporary laneline and centerline delineation is not shown on the plans and for providing equivalent patterns of permanent traffic lines for those areas when required, shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no separate payment will be made therefor.

### **TEMPORARY EDGE LINE DELINEATION**

On multilane roadways (freeways and expressways), whenever edgelines are obliterated and temporary pavement delineation to replace those edgelines is not shown on the plans, the edgeline delineation to be provided for those areas adjacent to lanes open to public traffic shall be as follows:

- A. Temporary pavement delineation for right edgelines shall, at the option of the Contractor, consist of either a solid 100-mm wide traffic stripe of the same color as the stripe the temporary edgeline delineation replaces, or traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m.
- B. Temporary pavement delineation for left edgelines shall, at the option of the Contractor, consist of either solid 100-mm wide traffic stripe of the same color as the stripe the temporary edgeline delineation replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m or temporary pavement markers placed at longitudinal intervals of not more than 1.8 m. Temporary pavement markers used for temporary left edgeline delineation shall be one of the types of temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (6 months or less) in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Traffic stripe (100-mm wide) placed as temporary edgeline delineation which will require removal shall conform to the provisions of "Temporary Traffic Stripe (Tape)" of these special provisions. Where removal of the 100-mm wide traffic stripe will not be required, painted traffic stripe conforming to the provisions of "Temporary Traffic Stripe (Paint)" of these special provisions may be used. The quantity of temporary traffic stripe (tape) or temporary traffic stripe (paint) used for this temporary edgeline delineation will not be included in the quantities of tape or paint to be paid for.

The lateral offset for traffic cones, portable delineators or channelizers used for temporary edgeline delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edgelines, the Contractor shall provide personnel to remain at the project site to maintain the cones or delineators during the hours of the day that the portable delineators are in use.

Channelizers used for temporary edgeline delineation shall be the surface mounted type and shall be orange in color. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in "Pavement Markers" of these special provisions, except epoxy adhesive shall not be used to place channelizers on the top layer of pavement. Channelizers shall be, at the Contractor's option, one of the surface mount types (900 mm) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary edgeline delineation shall be removed when no longer required for the direction of public traffic as determined by the Engineer.

The quantity of channelizers used as temporary edgeline delineation will not be included in the quantity of channelizers to be paid for. Full compensation for furnishing, placing, maintaining and removing temporary edgeline delineation for those areas where temporary edgeline delineation is not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated the edgeline pavement delineation and no separate payment will be made therefor.

### **TEMPORARY TRAFFIC STRIPE (PAINT)**

Temporary traffic stripe consisting of painted traffic stripe shall be applied and maintained at the locations shown on the plans. The painted temporary traffic stripe shall be complete in place at the location shown prior to opening the traveled way to public traffic. Removal of painted temporary traffic stripe will not be required.

Temporary painted traffic stripe shall conform to the provisions in Section 84-3, "Painted Traffic Stripes And Pavement Markings," of the Standard Specifications, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless of whether on new or existing pavement.

At the Contractor's option, temporary removable striping tape listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions may be used instead of painted temporary traffic stripes. When traffic stripe tape is used in place of painted temporary traffic stripes, the tape will be measured and paid for by the meter as temporary traffic stripe (paint).

When painted traffic stripe is specified for temporary left edgeline delineation, temporary pavement markers placed at longitudinal intervals of not more than 1.8 m may be used in place of the temporary painted traffic stripe. Temporary pavement markers shall be one of the types of temporary pavement markers listed for long term day/night use (6 months or less) in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. When temporary reflective pavement markers are used in place of temporary painted traffic stripe, payment for those temporary pavement markers will be made on the basis of the theoretical quantity of temporary traffic stripe (paint) required for the left edgeline the temporary pavement markers replace.

### **TEMPORARY PAVEMENT MARKING (PAINT)**

Temporary pavement marking consisting of painted pavement marking shall be applied and maintained at the locations shown on the plans. The painted temporary pavement marking shall be complete in place at the location shown prior to opening the traveled way to public traffic. Removal of painted temporary pavement marking will not be required.

Temporary painted pavement marking shall conform to the provisions in Section 84-3, "Painted Traffic Stripes And Pavement Markings," of the Standard Specifications, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless whether on new or existing pavement.

At the Contractor's option, temporary removable pavement marking tape or permanent pavement marking tape listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions may be used instead of painted temporary pavement markings. When pavement marking tape is used, regardless of which type of tape is placed, the tape will be measured and paid for by the square meter as temporary pavement marking (paint).

### **TEMPORARY PAVEMENT MARKERS**

Temporary pavement markers shall be applied at the locations shown on the plans. The pavement markers shall be applied complete in place at the locations shown prior to opening the traveled way to public traffic.

Temporary pavement markers shown on the plans shall be, at the option of the Contractor, one of the temporary pavement markers for long term day/night use (6 months or less) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary pavement markers shall be placed in conformance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used in areas where removal of the pavement markers will be required.

Where the temporary pavement delineation shown on the plans for lanelines or centerlines consists entirely of a pattern of broken traffic stripe and pavement markers, the Contractor may use groups of the temporary pavement markers for long term day/night use (6 months or less) in place of the temporary traffic stripe tape or painted temporary traffic stripe. The groups of pavement markers shall be spaced as shown on the plans for a similar pattern of permanent traffic line, except pavement markers shown to be placed in the gap between the broken traffic stripe shall be placed as part of the group to delineate the pattern of broken temporary traffic stripe. The kind of laneline and centerline delineation selected by the Contractor shall be continuous within a given location. Payment for those temporary pavement markers used in place of temporary traffic stripe will be made on the basis of the theoretical length of the patterns of temporary traffic stripe (tape) or temporary traffic stripe (paint).

Retroreflective pavement markers conforming to the provisions in "Pavement Markers" of these special provisions may be used in place of temporary pavement markers for long term day/night use (6 months or less) except to simulate patterns of broken traffic stripe. Placement of the retroreflective pavement markers used for temporary pavement markers shall conform to the provisions in "Pavement Markers" of these special provisions except the waiting period provisions before placing the pavement markers on new asphalt concrete surfacing as specified in Section 85-1.06, "Placement," of the Standard Specifications shall not apply and epoxy adhesive shall not be used to place pavement markers in areas where removal of the pavement markers will be required.

Temporary traffic stripe (paint) and temporary pavement marking (paint) will be measured and paid for in the same manner specified for paint traffic stripe (1-coat) and paint pavement marking (1-coat) in Section 84-3.06, "Measurement," and Section 84-3.07, "Payment," of the Standard Specifications.

Temporary pavement markers, shown on the plans, will be measured and paid for by the unit in the same manner specified for retroreflective pavement markers in Section 85-1.08, "Measurement," and Section 85-1.09, "Payment," of the Standard Specifications. Temporary pavement markers used for temporary laneline and centerline delineation for areas which are not shown on the plans will not be included in the quantities of temporary pavement markers to be paid for. Full compensation for removing temporary pavement markers, when no longer required, shall be considered as included in the contract unit price paid for temporary pavement marker and no separate payment will be made therefor.

#### **10-1.23 PORTABLE CHANGEABLE MESSAGE SIGN**

Portable changeable message signs shall be furnished, placed, operated, and maintained at those locations shown on the plans or where designated by the Engineer in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Maintaining Traffic" of these special provisions regarding the use of the portable changeable message signs.

#### **10-1.24 TEMPORARY RAILING**

Temporary railing (Type K) shall be placed as shown on the plans, as specified in the Standard Specifications or these special provisions or where ordered by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Temporary railing (Type K) shall be placed to provide at least 0.6 meter of clearance between the base of the railing and any physical portion of the work. Whenever the 0.6 meter clearance cannot be provided, the temporary railing (Type K) shall be securely fastened to the roadway surface.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary railing (Type K) shall conform to the details shown on Standard Plan T3. Temporary railing (Type K) fabricated prior to January 1, 1993, and conforming to 1988 Standard Plan B11-30 may be used, provided the fabrication date is printed on the required Certificate of Compliance.

Attention is directed to "Public Safety" and "Order of Work" of these special provisions.

Temporary railing (Type K) placed in conformance with the provisions in "Public Safety" of these special provisions will be neither measured nor paid for.

#### **10-1.25 CHANNELIZER**

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

#### **10-1.26 TEMPORARY CRASH CUSHION MODULE**

This work shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these special provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these special provisions.

Attention is directed to "Public Safety", "Order of Work", and "Temporary Railing" of these special provisions.

Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 4.6 m or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

At the Contractor's option, the modules for use in sand filled temporary crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or Traffix Sand Barrels manufactured after March 31, 1997, or equal:

- A. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601-2076. Telephone 1-312-467-6750, FAX 1-800-770-6755.
  - 1. Distributor (North): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828. Telephone 1-800-884-8274, FAX 1-916-387-9734.
  - 2. Distributor (South): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805. Telephone 1-800-222-8274, FAX 1-714-937-1070.
- B. Traffix Sand Barrels, manufactured by Traffix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672. Telephone 1-949 361-5663, FAX 1-949 361-9205.
  - 1. Distributor (North): United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112. Telephone 1-408 287-4303, FAX 1-408 287-1929.
  - 2. Distributor (South): Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448. Telephone 1-800-559-7080, FAX 1-805 929-5786.

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in kilograms for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

Temporary crash cushion modules shall be placed on movable pallets or frames conforming to the dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.

Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with the provisions in "Public Safety" of these special provisions and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.

If the Engineer orders a lateral move of the sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

The contract unit price paid for temporary crash cushion module shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and resetting during a work period for access to the work, and removing from the site of the work when no longer required (including those damaged by public traffic) sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.27 EXISTING HIGHWAY FACILITIES**

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Except as otherwise provided for damaged materials in Section 15-2.04, "Salvage," of the Standard Specifications, the materials to be salvaged shall remain the property of the State, and shall be cleaned, packaged, bundled, tagged, and hauled to the District Recycle Center at the San Francisco-Oakland Bay Bridge warehouse supply area adjacent to the San Francisco-Oakland Bay Bridge Toll Plaza and stockpiled.

The Contractor shall notify the Engineer and the District Recycle Coordinator, telephone (510) 286-6111 a minimum of 48 hours prior to hauling salvaged material to the Recycle Center.

The recycle center is open from 8:00 am to 12 noon and from 1:00 pm to 2:30 pm on Mondays through Fridays, except legal holidays.

### **REMOVE TREE**

Trees shown on the plans, or designated in these special provisions to be removed, shall be removed in accordance with the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Trees shall be completely removed, including stumps and root system to a depth of 2 meters below finished grade.

Holes resulting from the removal of existing trees shall be backfilled the same day the trees are removed. Soil from the surrounding area may be used to backfill these holes. The backfill shall be graded to conform with the adjacent existing grade.

Removed tree materials shall be disposed of outside the highway right of way in conformance to the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. At the option of the Contractor, removed trees may be reduced to chips. Chipped material shall be spread within the project limits at locations designated by the Engineer.

Trees not otherwise shown on the plans, or designated in these special provisions to be removed, that are within the limits of excavation and embankment slopes, shall be removed in accordance with the provisions in Section 16 "Clearing and Grubbing," of the Standard Specifications and these special provisions.

The contract unit price paid for remove tree, except as otherwise provided, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing existing trees, complete in place, including removing and disposing of stumps and root system, backfilling holes, grading and chipping and spreading of chipped materials, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **ABANDON CULVERT**

Existing culverts, where shown on the plans to be abandoned, shall be abandoned in place or, at the option of the Contractor, the culverts shall be removed and disposed of. Resulting openings into existing structures that are to remain in place shall be plugged with commercial quality concrete containing not less than 300 kg of cement per cubic meter.

Abandoning culverts in place shall conform to the following:

- A. Culverts that intersect the side slopes shall be removed to a depth of not less than one meter measured normal to the plane of the finished side slope, before being abandoned.
- B. Culverts 300 mm in diameter and larger, shall, at the Contractor's option, be backfilled with either sand, controlled low strength material or slurry cement backfill conforming to the provisions in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications by any method acceptable to the Engineer that completely fills the pipe. Sand backfill material shall be clean, free draining, and free from roots and other deleterious substances.
- C. The ends of culverts shall be securely closed by a 150 mm thick tight fitting plug or wall of commercial quality concrete.

Culverts shall not be abandoned until their use is no longer required. The Contractor shall notify the Engineer in advance of any intended culvert abandonment.

Full compensation for concrete plugs, pipe removal, structure excavation, and backfill (including sand, controlled low strength material or slurry cement backfill) shall be considered as included in the contract unit price paid for abandon culvert and no additional compensation will be allowed therefor.

### **SALVAGE CRASH CUSHION MODULE**

Existing crash cushion modules, where shown on the plans to be salvaged, shall be removed and salvaged.

### **REMOVE METAL BEAM GUARD RAILING**

Existing metal beam guard railing, where shown on the plans to be removed, shall be removed and disposed of.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of. Full compensation for removing concrete anchors shall be considered as included in the contract price paid per meter for remove metal beam guard railing and no separate payment will be made therefor.

Full compensation for removing cable anchor assemblies, terminal anchor assemblies or steel foundation tubes shall be considered as included in the contract price paid per meter for remove metal beam guard railing and no separate payment will be made therefor.

### **REMOVE SINGLE METAL BEAM BARRIER**

Existing single metal beam barrier, where shown on the plans to be removed, shall be removed and disposed of.

### **REMOVE DOUBLE METAL BEAM BARRIER**

Existing double metal beam barrier, where shown on the plans to be removed, shall be removed and disposed of.

### **REMOVE SIGN STRUCTURE**

Existing sign structures, where shown on the plans to be removed, shall be removed and disposed of.

Overhead sign structure removal shall consist of removing posts, frames, portions of foundations, sign panels, walkways with safety railings, and sign lighting electrical equipment.

A sign structure shall not be removed until the structure is no longer required for the direction of public traffic.

Concrete foundations may be abandoned in place, except that the top portion, including anchor bolts, reinforcing steel, and conduits shall be removed to a depth of not less than one m below the adjacent finished grade. The resulting holes shall be backfilled and compacted with material equivalent to the surrounding material.

Electrical wiring shall be removed to the nearest pull box. Fuses within spliced connections in the pull box shall be removed and disposed of.

Electrical equipment, where shown on the plans, shall be salvaged.

### **REMOVE PAVEMENT MARKER**

Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation as determined by the Engineer, shall be removed and disposed of.

### **REMOVE YELLOW TRAFFIC STRIPE AND PAVEMENT MARKING**

Yellow traffic stripes to be removed shall be removed at the locations shown on the plans and at the locations designated by the Engineer.

Yellow thermoplastic traffic stripes may contain lead and chromium. Residue produced when yellow thermoplastic is removed may contain heavy metals in concentrations that exceed hazardous waste thresholds established by the California Code of Regulations and may produce toxic fumes when heated.

The removed yellow thermoplastic material shall be disposed of at a Class 1 disposal facility in conformance with the requirements of the disposal facility operator within 90 days after accumulating 100 kg of residue and dust. The Contractor shall make all arrangements with the operator of the disposal facility and perform all testing of the yellow thermoplastic and yellow paint residue required by the operator. The Contractor shall submit the name and location of the facility along with testing requirements to the Engineer not less than 21 days prior to removal of yellow thermoplastic and yellow painted traffic stripes and pavement markings.

The Contractor shall submit the written compliance programs required in Subsection (e)(2), "Compliance Program," of Section 1532.1, "Lead," of the Construction Safety Orders to the Engineer not less than 21 days prior to start of removal operations. The compliance programs shall be prepared by an industrial hygienist certified by the American Board of Industrial Hygiene and shall cover all Contractor or subcontractor employees removing or handling the yellow thermoplastic residue. Inspection reports shall be made in conformance with Section 1532.1, "Lead," and shall be submitted to the Engineer.

Prior to performing any removal, personnel who have no prior lead training, including State personnel, shall complete a safety training class provided by the Contractor, which meets the requirements of Title 8, Section 1532.1. The number of State personnel to be trained shall be 3.

Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic traffic stripes, the residue, including dust, shall be contained and collected immediately. Sweeping will not be allowed. Collection shall be by High Efficiency Particle Arresting (HEPA) vacuum attachment operated concurrently, or other equally effective method, with removal operations. The Contractor shall submit a removal, storage, and disposal workplan in writing to the Engineer for approval not less than 21 days prior to start of removal operations.

The collected residue shall be stored in properly labeled and covered containers approved by the United States Department of Transportation for transportation and temporary storage. The containers shall be handled in such a manner that no spillage will occur. The containers shall be stored in a secured enclosure at a location within the project limits approved by the Engineer while awaiting test results required by the operators of the disposal facility.

Contractors attention is directed to the Storm Water specifications contained in these special provisions.

Removed yellow thermoplastic material will remain the property of the State.

The removed material shall be transported to the Class 1 disposal facility by a transporter currently registered with the California Department of Toxic Substances Control using current manifesting procedures. The Engineer will obtain the United States Environmental Protection Agency Identification Number and sign all manifests as the generator. The California Board of Equalization Number (State's Generator ID) for this project is HY HQ 36-020676.

The Contractor shall assume that the yellow thermoplastic residue is not regulated under the Federal Resource Conservation and Recovery Act (RCRA). Additional disposal costs for residue regulated under RCRA, as determined by test results, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Except as otherwise provided above for possible additional costs to be paid for as extra work, full compensation for submitting the required compliance programs, providing safety training for Contractor and State personnel, making arrangements with the Class 1 disposal facility operator, providing for the temporary storage of the residue within a secured area, testing the residue as required by the disposal facility operator, transportation of the residue to the Class 1 disposal facility, and disposal of the residue, all as specified herein, shall be considered as included in the contract prices paid per meter for remove yellow thermoplastic traffic stripe and no additional compensation will be allowed therefor.

Nothing in these special provisions shall relieve the Contractor from the Contractor's responsibilities as provided in Section 7-1.09, "Public Safety," of the Standard Specifications.

#### **REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING**

Traffic stripes and pavement markings to be removed shall be removed at the locations shown on the plans and at the locations designated by the Engineer.

#### **REMOVE DRAINAGE FACILITY**

Existing culverts, inlets, headwalls, where any portion of these structures is within one meter of the grading plane in excavation areas, or within 0.3-m of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

#### **REMOVE ASPHALT CONCRETE DIKE AND ASPHALT CONCRETE OVERSIDE DRAIN**

Existing asphalt concrete dike and asphalt concrete overside drain, where shown on the plans to be removed, shall be removed.

Prior to removing the dike and overside drain, the outside edge of the asphalt concrete to remain in place shall be cut on a neat line to a minimum depth of 50 mm.

The dike and overside drain shall be removed in such a manner that the surfacing which is to remain in place is not damaged.

The dike and overside drain shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

#### **REMOVE ROADSIDE SIGN**

Existing roadside signs, at those locations shown on the plans to be removed, shall be removed and disposed of.

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the Engineer.

#### **REMOVE CHAIN LINK FENCE**

Existing chain link fence, at the locations shown on the plans, shall be removed and disposed of.

#### **RECONSTRUCT METAL BEAM GUARD RAILING**

Existing metal beam guard railing, where shown on the plans to be reconstructed, shall be reconstructed.

Attention is directed to "Order of Work" of these special provisions regarding the reconstruction of metal beam guard railing at those locations exposed to public traffic.

Cable anchor assemblies or terminal anchor assemblies, including concrete anchors and steel foundation tubes, shall be completely removed and disposed of.

New posts, blocks, and hardware shall be added as necessary to conform to the post spacing shown on the plans for new metal beam guard railing. New posts and blocks shall be alternated with existing posts and blocks in the new location. New posts, blocks, and hardware shall conform to the provisions in Section 83-1.02B, "Metal Beam Guard Railing," of the Standard Specifications.

Posts, blocks, and other components of the removed metal beam guard railing, including terminal sections, that are not used in the reconstruction work shall be disposed of.

Full compensation for furnishing and installing new posts, blocks, and hardware; for connecting reconstructed metal beam guard railing to existing structures, other flat concrete surfaces or terminal systems; and for removing and disposing of anchor assemblies shall be considered as included in the contract price paid per meter for reconstruct metal beam guard railing and no separate payment will be made therefor.

Terminal anchor assemblies (Type SFT) and terminal anchor assemblies (Type CA) for reconstructed metal beam guard railing will be measured and paid for separately and shall conform to the provisions in "Metal Beam Guard Railing" of these special provisions.

Terminal System (Type SRT) for connection to reconstructed metal beam guard railing will be measured and paid for separately in conformance with the provisions in "Terminal System (Type SRT)" of these special provisions.

### **RELOCATE SIGN STRUCTURE**

Relocating sign structures shall consist of removing and relocating existing sign structures as shown on the plans.

Each existing concrete foundation, including anchor bolts, reinforcing steel, and conduit shall be removed to a depth of not less than one m below the adjacent finished grade. Electrical wiring, if any, shall be removed to the nearest pull box. Removed portions of the concrete foundations shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

New foundation work for relocated sign structures shall conform to the provisions in Section 56-1, "Overhead Sign Structures," of the Standard Specifications, except that full compensation for furnishing and installing a new anchor bolt assembly on each new foundation shall be considered as included in the contract price paid per meter for the size of cast-in-drilled-hole concrete pile (sign foundation) involved and no separate payment will be made therefor.

Sign lighting electrical work is provided for in Section 10-3, "Signals, Lighting And Electrical Systems," of these special provisions.

### **RELOCATE ROADSIDE SIGN**

Existing roadside signs shall be removed and relocated to the new locations shown on the plans.

Each roadside sign shall be installed at the new location on the same day that the sign is removed from its original location.

Two holes shall be drilled in each existing post as required to provide the breakaway feature shown on the plans.

### **MODIFY INLET TO MANHOLE**

Existing pipe inlets and concrete drainage inlets shall be modified as shown on the plans.

Portland cement concrete shall be minor concrete or may be produced from commercial quality concrete containing not less than 350 kilograms of cement per cubic meter.

Where inlets are located in areas to be paved or surfaced, no individual structure shall be constructed to final grade until the paving or surfacing has been completed immediately adjacent to the structure.

### **MODIFY INLET**

Existing concrete drainage inlets shall be modified as shown on the plans.

Portland cement concrete shall be minor concrete or may be produced from commercial quality concrete containing not less than 350 kilograms of cement per cubic meter.

Modification of inlets (method I) shall be performed prior to paving and shall be limited to the area to be paved or surfaced during the working day in which the adjustment is performed. The top of the inlet grate or cover shall be protected from the asphalt concrete during paving operations by means of heavy plywood covers, steel plate covers or by other methods approved by the Engineer. Excess paving material shall be removed prior to rolling.

Modification of inlets (method II) and inlets (method III) shall not be constructed to final grade until the paving or surfacing has been completed immediately adjacent to the structure.

### **ADJUST INLET**

Existing concrete drainage inlets shall be adjusted as shown on the plans.

Portland cement concrete shall be minor concrete or may be produced from commercial quality concrete containing not less than 350 kilograms of cement per cubic meter.



Adjustment of type I inlets shall be performed prior to paving and shall be limited to the area to be paved or surfaced during the working day in which the adjustment is performed. The top of the inlet grate or cover shall be protected from the asphalt concrete during paving operations by means of heavy plywood covers, steel plate covers or by other methods approved by the Engineer. Excess paving material shall be removed prior to rolling.

Where type II inlets are located in areas to be paved or surfaced, no individual structure shall be constructed to final grade until the paving or surfacing has been completed immediately adjacent to the structure.

### **ADJUST MANHOLE TO GRADE**

Manholes shall be adjusted to grade in conformance with the provisions in Section 15-2.05, "Reconstruction," of the Standard Specifications.

### **COLD PLANE ASPHALT CONCRETE PAVEMENT**

Existing asphalt concrete pavement shall be cold planed at the locations and to the dimensions shown on the plans.

Planing asphalt concrete pavement shall be performed by the cold planing method. Planing of the asphalt concrete pavement shall not be done by the heater planing method.

Cold planing machines shall be equipped with a cutter head not less than 750 mm in width and shall be operated so that no fumes or smoke will be produced. The cold planing machine shall plane the pavement without requiring the use of a heating device to soften the pavement during or prior to the planing operation.

The depth, width, and shape of the cut shall be as shown on the typical cross sections or as designated by the Engineer. The final cut shall result in a uniform surface conforming to the typical cross sections. The outside lines of the planed area shall be neat and uniform. Planing asphalt concrete pavement operations shall be performed without damage to the surfacing to remain in place.

Planed widths of pavement shall be continuous except for intersections at cross streets where the planing shall be carried around the corners and through the conform lines. Following planing operations, a drop-off of more than 45 mm will not be allowed between adjacent lanes open to public traffic.

Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If asphalt concrete has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary asphalt concrete taper shall be constructed. Asphalt concrete for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:30 (Vertical: Horizontal) or flatter to the level of the planed area.

Asphalt concrete for temporary tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers shall be completely removed, including the removal of loose material from the underlying surface, before placing the permanent surfacing. The removed material shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Operations shall be scheduled so that not more than 7 days shall elapse between the time when transverse joints are planed in the pavement at the conform lines and the permanent surfacing is placed at the conform lines.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Removal operations of cold planed material shall be concurrent with planing operations and follow within 15 m of the planer, unless otherwise directed by the Engineer.

Cold plane asphalt concrete pavement will be measured by the square meter for the depth (maximum) designated in the Engineer's Estimate. The quantity to be paid for will be the actual area of surface cold planed for the depth (maximum) designated in the Engineer's Estimate, irrespective of the number of passes required to obtain the depth shown on the plans.

The contract price paid per square meter for cold plane asphalt concrete pavement for the depth (maximum) designated in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cold planing asphalt concrete surfacing and disposing of planed material, including furnishing the asphalt concrete for and constructing, maintaining, removing, and disposing of temporary asphalt concrete tapers, as specified in the Standard Specifications and these special provisions and as directed by the Engineer.

### **CAP INLET**

Existing concrete drainage inlets, where shown on the plans to be capped, shall be capped and the bottoms of the inlets shall be rounded with portland cement concrete as shown on the plans.

Portland cement concrete shall be minor concrete or may be produced from commercial quality aggregates and cement containing not less than 350 kg of cement per cubic meter.

Inlets shall be removed to a depth of at least 0.3-m below the grading plane.

Concrete removal shall be performed without damage to portions of the inlet that are to remain in place. Damage to existing concrete, which is to remain in place, shall be repaired by the Contractor to a condition equal to that existing prior to the beginning of removal operations. The repair of existing concrete damaged by the Contractor's operations shall be at the Contractor's expense.

Existing reinforcement that is to be incorporated in the new work shall be protected from damage and shall be thoroughly cleaned of adhering material before being embedded in the new concrete.

The quantity of capping inlets will be determined as units from actual count.

The contract unit price paid for cap inlet shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in capping inlets, including removing portions of inlets, rounding bottoms of inlets, bar reinforcing steel, and structure excavation and structure backfill, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **CAP RISER**

Existing risers, where shown on the plans to be capped, shall be capped and the bottoms of the risers shall be rounded with portland cement concrete as shown on the plans.

Portland cement concrete shall be minor concrete or may be produced from commercial quality aggregates and cement containing not less than 350 kg of cement per cubic meter.

Risers shall be removed to a depth of at least 0.3-m below the grading plane.

Concrete removal shall be performed without damage to portions of the riser that are to remain in place. Damage to existing concrete, which is to remain in place, shall be repaired by the Contractor to a condition equal to that existing prior to the beginning of removal operations. The repair of existing concrete damaged by the Contractor's operations shall be at the Contractor's expense.

Existing reinforcement that is to be incorporated in the new work shall be protected from damage and shall be thoroughly cleaned of adhering material before being embedded in the new concrete.

The quantity of capping risers will be determined as units from actual count.

The contract unit price paid for cap riser shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in capping risers, including removing portions of risers, rounding bottoms of risers, bar reinforcing steel, and structure excavation and structure backfill, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **REMOVE CONCRETE**

Concrete, where shown on the plans to be removed, shall be removed.

The pay quantities of concrete to be removed will be measured by the cubic meter, measured before and during removal operations.

Concrete to be removed shall be disposed at "Excess Material Site" as shown on the plans.

Where no joint exists between concrete to be removed and concrete to remain in place, the concrete shall be cut on a neat line to a minimum depth of 50 mm with a power driven saw before the concrete is removed.

Where concrete has been removed outside the roadway prism, the backfilled areas shall be graded to drain and blend in with the surrounding terrain.

Concrete to be removed which has portions of the same structure both above and below ground will be considered as concrete above ground for compensation.

### **10-1.28 CLEARING AND GRUBBING**

Clearing and grubbing shall conform to the provisions in Section 16 "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Vegetation shall be cleared and grubbed only within the excavation and embankment slope lines.

At locations where there is no grading adjacent to a bridge or other structure, clearing and grubbing of vegetation shall be limited to 1.5 m outside the physical limits of the bridge or structure.

Existing vegetation outside the areas to be cleared and grubbed shall be protected from injury or damage resulting from the Contractor's operations.

Activities controlled by the Contractor, except cleanup or other required work, shall be confined within the graded areas of the roadway.

Nothing herein shall be construed as relieving the Contractor of the Contractor's responsibility for final cleanup of the highway as provided in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

Attention is directed to "Aerially Deposited Lead" elsewhere in these specifications.

Clearing and grubbing operations shall result in no visible dust. No material containing lead shall be deposited on public roads. The Contractor shall indemnify the State from any costs due to spillage of material containing lead during transport.

The Contractor shall separate soil from vegetation, and the soils will remain on the site.

All activities controlled by the Contractor, except cleanup or other required work, shall be confined within the graded areas of the roadway.

#### **10-1.29 EARTHWORK**

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these special provisions.

Attention is directed to "Material Containing Aerially Deposited Lead" of these special provisions.

Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 50 mm before removing the surfacing. Full compensation for cutting the existing surfacing shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor.

#### **10-1.30 CONTROLLED LOW STRENGTH MATERIAL**

Controlled low strength material shall consist of a workable mixture of aggregate, cementitious materials, and water and shall conform to the provisions for slurry cement backfill in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications and these special provisions.

At the option of the Contractor, controlled low strength material may be used as structure backfill for pipe culverts, except that controlled low strength material shall not be used as structure backfill for aluminum and aluminum-coated culverts nor for culverts having a diameter or span greater than 6.1 m.

When controlled low strength material is used for structure backfill, the width of the excavation shown on the plans may be reduced so that the clear distance between the outside of the pipe and the side of the excavation, on each side of the pipe, is a minimum of 300 mm. This minimum may be reduced to 150 mm when the height of cover is less than or equal to 6.1 m or the pipe diameter or span is less than 1050 mm.

Controlled low strength material in new construction shall not be permanently placed higher than the basement soil. For trenches in existing pavements, permanent placement shall be no higher than the bottom of the existing pavement permeable drainage layer. If a drainage layer does not exist, permanent placement in existing pavements shall be no higher than 25 mm below the bottom of the existing asphalt concrete surfacing or no higher than the top of base below the existing portland cement concrete pavement. The minimum height that controlled low strength material shall be placed, relative to the culvert invert, is 0.5 diameter or 0.5 height for rigid culverts and 0.7 diameter or 0.7 height for flexible culverts.

When controlled low strength material is proposed for use, the Contractor shall submit a mix design and test data to the Engineer for approval prior to excavating the trench for which controlled low strength material is proposed for use. The test data and mix design shall provide for the following:

- A. A 28-day compressive strength between 345 kPa and 690 kPa for pipe culverts having a height of cover of 6.1 m or less and a minimum 28-day compressive strength of 690 kPa for pipe culverts having a height of cover greater than 6.1 m. Compressive strength shall be determined in conformance with the requirements in ASTM Designation: D 4832.
- B. When controlled low strength material is used as structure backfill for pipe culverts, the sections of pipe culvert in contact with the controlled low strength material shall conform to the requirements of Chapter 850 of the Highway Design Manual using the minimum resistivity, pH, chloride content, and sulfate content of the hardened controlled low strength material. Minimum resistivity and pH shall be determined in conformance with the requirements of California Test 643. The chloride content shall be determined in conformance with the requirements of California Test 422 and the sulfate content shall be determined in conformance with the requirements of California Test 417.
- C. Cement shall be any type of portland cement conforming to the requirements in ASTM Designation: C 150; or any type of blended hydraulic cement conforming to the requirements in ASTM Designation: C 595M or the physical requirements in ASTM Designation: C 1157M. Testing of cement will not be required.
- D. Admixtures may be used in conformance with the provisions in Section 90-4, "Admixtures," of the Standard Specifications. Chemical admixtures containing chlorides as Cl in excess of one percent by mass of admixture, as determined in conformance with the requirements of California Test 415, shall not be used. If an air-entraining admixture is used, the maximum air content shall be limited to 20 percent. Mineral admixtures shall be used at the Contractor's option.

Materials for controlled low strength material shall be thoroughly machine-mixed in a pugmill, rotary drum or other approved mixer. Mixing shall continue until the cementitious material and water are thoroughly dispersed throughout the material. Controlled low strength material shall be placed in the work within 3 hours after introduction of the cement to the aggregates.

When controlled low strength material is to be placed within the traveled way or otherwise to be covered by paving or embankment materials, the material shall achieve a maximum indentation diameter of 76 mm prior to covering and opening to public traffic. Penetration resistance shall be measured in conformance with the requirements in ASTM Designation: D 6024.

Controlled low strength material used as structure backfill for pipe culverts will be considered structure backfill for compensation purposes.

#### **10-1.31 MATERIAL CONTAINING AERIALY DEPOSITED LEAD**

Earthwork involving materials containing aerially deposited lead shall conform to the provisions in "Earthwork" and this section "Material Containing Aerially Deposited Lead" of these special provisions.

Attention is directed to "Aerially Deposited Lead" of these special provisions.

Type Y material contains aerially deposited lead in average concentrations greater than or equal to 5.0 mg/L Soluble Lead and between 0 - 350 mg/kg (inclusive) Total Lead, as tested using the California Waste Extraction Test. Type Y material exists between 0.0 m and 3.0 m, measured horizontally from the edges of existing pavement, in all excavation areas within the project limits from a depth of 0.0 m to 0.6 m below existing grade, or as shown on the plans. These materials shall be placed as shown on the plans, unless otherwise directed by the Engineer, and covered with a minimum 0.3-m layer of non-hazardous soil or pavement. These materials are hazardous waste regulated by the State of California that may be reused as permitted under the Variance of the Department of Toxic Substances Control. Temporary surplus material may be generated on this project due to the requirements of stage construction. Temporary surplus material shall not be transported outside the project limits. In order to conform to the requirements of these provisions, it may be necessary to stockpile materials for subsequent stages or construct some embankments out of stage or handle temporary surplus material more than once.

#### **LEAD COMPLIANCE PLAN**

The Contractor shall prepare a project specific Lead Compliance Plan to prevent or minimize worker exposure to lead while handling material containing aerially deposited lead. Attention is directed to Title 8, California Code of Regulations, Section 1532.1, "Lead," for specific Cal-OSHA requirements when working with lead.

The Lead Compliance Plan shall contain the elements listed in Title 8, California Code of Regulations, Section 1532.1(e)(2)(B). Before submission to the Engineer, the Lead Compliance Plan shall be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Plan shall be submitted to the Engineer for review and acceptance at least 15 days prior to beginning work in areas containing aerially deposited lead.

The Contractor shall not work in areas containing aerially deposited lead within the project limits, unless authorized in writing by the Engineer, until the Engineer has accepted the Lead Compliance Plan.

Prior to performing work in areas containing aerially deposited lead, personnel who have no prior training or are not current in their training status, including State personnel, shall complete a safety training program provided by the Contractor. The safety training program shall meet the requirements of Title 8, California Code of Regulations, Section 1532.1, "Lead."

Personal protective equipment, training, and washing facilities required by the Contractor's Lead Compliance Plan shall be supplied to State personnel by the Contractor. The number of State personnel will be 5.

The Engineer will notify the Contractor of acceptance or rejection of any submitted or revised Lead Compliance Plan not more than 10 days after submittal of the plan.

The contract lump sum price paid for Lead Compliance Plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing the Lead Compliance Plan, including paying the Certified Industrial Hygienist, and for providing personal protective equipment, training and medical surveillance, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **EXCAVATION AND TRANSPORTATION PLAN**

Within 15 working days after approval of the contract, the Contractor shall submit 3 copies of the Excavation and Transportation Plan to the Engineer. The Engineer will have 10 working days to review the Excavation and Transportation Plan. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the Excavation and Transportation Plan within 10 working days of receipt of the Engineer's comments. The Engineer will have 10 working days to review the revisions. Upon the Engineer's approval of the Excavation and Transportation Plan, 3 additional copies of the Excavation and Transportation Plan incorporating the required changes shall be submitted to the Engineer. Minor changes or clarifications to the initial submittal may be made and attached as amendments to the Excavation and Transportation Plan. In order to allow construction to proceed, the Engineer may conditionally approve the Excavation and Transportation Plan while minor revisions or amendments to the Plan are being completed.

The Contractor shall prepare a written, project specific Excavation and Transportation Plan establishing the procedures the Contractor will use to comply with requirements for excavating, transporting, and placing (or disposing) of material containing aerially deposited lead. The Excavation and Transportation Plan shall conform to the regulations of the Department of Toxic Substance Control and the California Division of Occupational Safety and Health Administration (Cal-OSHA). The sampling and analysis plans shall meet the requirements for the design and development of the sampling plan, statistical analysis, and reporting of test results contained in USEPA, SW 846, "Test Methods for Evaluating Solid Waste," Volume II: Field Manual Physical/Chemical, Chapter Nine, Section 9.1. The plan shall contain, but not be limited to the following elements:

- A. Excavation schedule (by location and date)
- B. Temporary locations of stockpiled material
- C. Sampling and analysis plans for areas after removal of a stockpile
  - 1. Location and number of samples
  - 2. Analytical laboratory
- D. Sampling and analysis plan for soil cover
- E. Dust control measures
- F. Air monitoring
  - 1. Location and type of equipment
  - 2. Sampling frequency
  - 3. Analytical laboratory
- G. Transportation equipment and routes
- H. Method for preventing spills and tracking material onto public roads
- I. Truck waiting and staging areas
- J. Example of Bill of Lading to be carried by trucks transporting Type Y material. The Bill of Lading shall contain: US DOT description including shipping name, hazard class, and ID number; handling codes; quantity of material; volume of material. Copies of the bills of lading shall be provided to the Engineer upon placement of Type Y material in its final location. Trucks carrying Type Y material shall not leave the highway right of way.
- K. Spill Contingency Plan for material containing aerially deposited lead

## **DUST CONTROL**

Excavation, transportation, placement, and handling of materials containing aerially deposited lead shall result in no visible dust migration. The Contractor shall have a water truck or tank on the job site at all times while clearing and grubbing and performing earthwork operations in work areas containing aerially deposited lead.

Stockpiles of material containing aerially deposited lead shall not be placed where affected by surface run-on or run-off. Stockpiles shall be covered with plastic sheeting 0.33 mm minimum thickness or 0.3 m of non-hazardous material. Stockpiles shall not be placed in environmentally sensitive areas. Stockpiled material shall not enter storm drains, inlets, or waters of the State.

## **MATERIAL TRANSPORTATION**

Prior to traveling on public roads, loose and extraneous material shall be removed from surfaces outside the cargo areas of the transporting vehicles and the cargo shall be covered with tarpaulins, or other cover, as outlined in the approved Excavation and Transportation Plan. The Contractor shall be responsible for costs due to spillage of material containing lead during transport.

## **MEASUREMENT AND PAYMENT**

Quantities of roadway excavation (aerially deposited lead) of the type shown in the Engineer's Estimate, will be measured and paid for in the same manner specified for roadway excavation and structure excavation, respectively, in Section 19, "Earthwork," of the Standard Specifications.

Full compensation for preparing an approved Excavation and Transportation Plan, transporting material containing aerially deposited lead reused in the work from location to location, and transporting material containing aerially deposited lead shall be considered as included in the contract prices paid per cubic meter for the items of roadway excavation (aerially deposited lead) and no additional compensation will be allowed therefor.

No payment for stockpiling of material containing aerially deposited lead will be made, unless the stockpiling is ordered by the Engineer.

### **10-1.32 SHOULDER BACKING**

This work shall consist of constructing shoulder backing adjacent to the edge of the new surfacing in conformance with the details shown on the plans and these special provisions.

Material for shoulder backing shall consist of native material. The material shall be bladed or graded from areas adjacent to the shoulder backing as determined by the Engineer or as shown on the plans.

The areas where shoulder backing is to be constructed and areas where native material is to be obtained for shoulder backing shall be cleared of weeds, grass, and debris. Removed weeds and grass shall be disposed of uniformly over adjacent slope areas and removed debris shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Large rocks in native material used for shoulder backing shall be removed if ordered by the Engineer. Removal of large rocks from native material will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Shoulder backing material shall be thoroughly mixed with the basement material by scarifying or blading and then watered and rolled to form a smooth, firmly compacted surface. Watering shall conform to the provisions in Section 17, "Watering," of the Standard Specifications.

Shoulder backing material shall not be deposited on the new surfacing prior to placing the material in the final position, nor shall the material be deposited onto the new surfacing during mixing, watering, and blading operations.

Shoulder backing construction shall be completed along the edges of any portion of new surfacing within 5 days after completion of that portion of the new surfacing. Prior to opening a lane adjacent to uncompleted shoulder backing to uncontrolled public traffic, the Contractor shall furnish, place, and maintain portable delineators and C31 (Low Shoulder) signs off of and adjacent to the new surfacing. Portable delineators shall be placed at the beginning and along the drop-off of the edge of pavement, in the direction of travel, at successive maximum intervals of 150 meters on tangents and 60 meters on curves. C31 signs shall be placed at the beginning and along the drop-off at successive maximum intervals of 600 meters. The portable delineators and C31 signs shall be maintained in place at each location until the shoulder backing is completed at that location. Portable delineators and signs shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, except the signs may be set on temporary portable supports or on barricades.

Shoulder backing will be measured by the station along each edge of surfacing where shoulder backing is constructed. A station shall be considered to be 100 meters. The length of shoulder backing to be paid for will be determined from actual measurement or calculated from centerline stationing or kilometer post distance determined by the Engineer.

The contract price paid per station for shoulder backing shall include full compensation for furnishing all labor (except removal of rocks from native material), materials, tools, equipment, and incidentals, and for doing all the work involved in constructing shoulder backing, complete in place, including furnishing, placing, maintaining, and removing portable delineators, C31 signs, and temporary supports or barricades for the signs, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.33 SUBGRADE ENHANCEMENT FABRIC**

Subgrade enhancement fabric shall be placed directly on cleared subgrade, longitudinally along the alignment to the limits or as designated by the Engineer.

Subgrade enhancement fabric (SEF) shall be manufactured from one or more of the following materials: polyester, nylon, or polypropylene.

Subgrade enhancement fabric shall be nonwoven and shall conform to the following requirements:

| <b>Geotextile Property<br/>&amp; Standard Test</b>                         | <b>Value</b> |
|--|--------------|
| Grab Tensile Strength, minimum, kN<br>(ASTM D-4632)                        | 0.70         |
| Puncture Resistance, minimum, kN<br>(ASTM D-4833)                          | 0.25         |
| Burst Resistance, minimum, MPa<br>(ASTM D-3786)                            | 1.30         |
| Tear (impact) Resistance, minimum, kN,<br>(ASTM D-4533)                    | 0.25         |
| Elongation, minimum, %,<br>(ASTM D-4632)                                   | 50           |
| Apparent Opening Size (AOS), maximum, mm<br>(ASTM D-4751)                  | 0.30         |
| Permittivity, minimum, sec <sup>-1</sup><br>(ASTM D-4491)                  | 0.10         |
| Ultraviolet Stability, minimum, %,<br>ASTM D-4355 (after 500 hrs exposure) | 50           |

All property values, except for the apparent opening size (AOS), shall be based on minimum average roll value in the weaker principal direction. For the apparent opening size, the values shall be based on maximum average roll value.

Subgrade enhancement fabric shall be furnished in an appropriate protective cover capable of protecting it from water, ultraviolet radiation due to sunshine, and abrasion due to shipping and handling, and shall remain in said cover until installation.

Subgrade enhancement fabric shall be accompanied by a Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificate of Compliance," of the Standard Specifications.

The subgrade to receive the fabric, immediately prior to placing, shall conform to the elevation tolerance specified in the plans and shall be free of loose or extraneous material and sharp objects that may damage the fabric during installation.

Subgrade enhancement fabric shall be handled and placed in accordance with the manufacturer's recommendations and shall be positioned longitudinally along the alignment and pulled taut to form a tight, wrinkle-free mat on the prepared subgrade.

Adjacent borders of adjacent rolls of the fabric shall be overlapped a minimum of 600 mm in the direction as ordered by the Engineer. All roll ends shall be overlapped a minimum of 1000 mm in the direction of the spreading of the aggregate subbase material.

On curves, the fabric may be folded or cut to conform to the curves. If cut, a minimum overlap of 600 mm shall be provided for adjacent fabric sides. The fold or overlap shall be held in place by staples, pins, or piles of fill of the materials to be placed on the fabric, or as directed by the Engineer.

The amount of subgrade enhancement fabric placed shall be limited to that which can be covered with aggregate subbase material within 72 hours.

Stockpiling of materials directly on the subgrade enhancement fabric is not allowed. Once a sufficient working platform has been constructed to allow compaction, as determined by the Engineer, all remaining materials shall be placed and compacted in accordance with these special provisions and the Standard Specifications. Until a sufficient working platform has been constructed, compaction shall be achieved by using either smooth wheel (without vibratory action) or rubber tired rollers. Sheepsfoot or other types of equipment employing a foot shall not be used. Excessive turning of vehicles shall not be allowed on the aggregate subbase material over the fabric.

Equipment or vehicles shall not be operated or driven directly on the subgrade enhancement fabric.

Subgrade enhancement fabric damaged during placement shall be repaired or replaced, as directed by the Engineer, by the Contractor at the Contractor's expense. Fabric damaged beyond repair, as determined by the Engineer, shall be replaced. Repairing damaged fabric shall consist of placing new fabric over the damaged area. The minimum fabric overlap from the edge of the damaged area shall be 600 mm for overlap joints.

Subgrade enhancement fabric will be measured by the square meter. The quantity to be paid for will be the actual area covered not including additional fabric required for overlaps.

The contract price paid per square meter for subgrade enhancement fabric shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and placing subgrade enhancement fabric, complete in place, as shown on the plans as specified in these special provisions, and as directed by the Engineer.

#### 10-1.34 EROSION CONTROL (BLANKET)

Erosion control (blanket) shall conform to the details shown on the plans, the provisions in Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions.

Erosion control (blanket) work shall consist of applying seed, fiber, and compost, and installing erosion control blanket to unlined ditches as shown on the plans and other areas designated by the Engineer.

##### MATERIALS

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions.

##### Seed

Seed for erosion control (blanket) shall conform to the provisions specified for seed under "Erosion Control (Type D)" of these special provisions.

##### Erosion Control Blanket

Erosion control blanket shall consist of straw or wood excelsior mats secured in place with wire staples and shall conform to the following:

- A. Excelsior blanket material shall consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 150 mm or longer. The erosion control blanket shall be of consistent thickness and the wood fiber shall be evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with a photo-degradable extruded plastic mesh. The blanket shall be smolder resistant without the use of chemical additives and shall be non-toxic and non-injurious to plant and animal life. Erosion control blanket shall be furnished in rolled strips, 1220 mm  $\pm$  25 mm in width, and shall have an average mass of 0.5-kg/m<sup>2</sup>  $\pm$  10 percent at the time of manufacture.
- B. Straw blanket shall be machine produced mats of straw with a lightweight photo-degradable netting on top. The straw shall be adhered to the netting with biodegradable thread or glue strip. The straw erosion control blanket shall be of consistent thickness and the straw shall be evenly distributed over the entire area of the blanket. Straw erosion control blanket shall be furnished in rolled strips with a minimum width of 2 m, minimum length of 25 m  $\pm$  one m and a minimum mass of 0.27-kg/m<sup>2</sup>.
- C. Staples for erosion control blankets shall be made of 11-gage minimum steel wire and shall be U-shaped with 200-mm legs and 50-mm crown.

##### APPLICATION

Erosion control (blanket) materials shall be placed in separate applications as follows:

- A. The first application shall consist of applying seed at the following rates and in the following sequence:
  - 1. Seed shall be applied at the rates indicated in the following table. If hydro-seeding equipment is used to apply seed, fiber, and compost, the mixture shall be applied within 30 minutes after the seed has been added to the mixture.

| Material        | Kilograms Per Hectare<br>(Slope Measurement) |
|-----------------|--|
| Non-Legume Seed | 65.0   |
| Legume Seed     | 10.0   |
| Fiber           | 170  |
| Compost         | 400  |

- B. The second application shall consist of installing the erosion control blanket over the seed.
- C. Erosion control blanket strips shall be placed loosely on the slope with the longitudinal joints parallel to the centerline of the ditch or swale. Longitudinal and transverse joints of blankets shall be according to the manufacturer's recommendations and stapled. Staples shall be driven perpendicular to the slopes, and shall be located and spaced in conformance with the manufacturer's instructions. Ends of the blankets shall be secured in place in conformance with the manufacturer's instructions.



## MEASUREMENT AND PAYMENT

The quantity of erosion control (blanket) will be determined by the square meter from actual slope measurement of the area covered by the erosion control blanket.

The contract price paid per square meter for erosion control (blanket) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing erosion control blanket, complete in place, including furnishing and applying pure live seed, compost, fiber, and the materials for the erosion control blanket, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### 10-1.35 EROSION CONTROL (TYPE D)

Erosion control (Type D) shall conform to the provisions in Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions.

Erosion control (Type D) work shall consist of applying erosion control materials to embankment and excavation slopes and other areas disturbed by construction activities. Erosion control (Type D) shall be applied during the period starting September 1 and ending November 30; or, if the slope on which the erosion control is to be placed is finished during the winter season as specified in "Water Pollution Control" of these special provisions, the erosion control shall be applied immediately; or, if the slope on which the erosion control is to be placed is finished outside both specified periods and the contract work will be completed before September 1, the erosion control shall be applied as a last item of work.

Prior to installing erosion control materials, soil surface preparation shall conform to the provisions in Section 19-2.05, "Slopes," of the Standard Specifications, except that rills and gullies exceeding 50 mm in depth or width shall be leveled. Vegetative growth, temporary erosion control materials and other debris shall be removed from areas to receive erosion control.

## MATERIALS

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions.

### Seed

Seed shall conform to the provisions in Section 20-2.10, "Seed," of the Standard Specifications. Individual seed species shall be measured and mixed in the presence of the Engineer.

Seed shall be delivered to the project site in unopened separate containers with the seed tag attached. Containers without a seed tag attached will not be accepted.

A sample of approximately 30 g of seed will be taken from each seed container by the Engineer.

### Legume Seed

Legume seed shall be pellet-inoculated or industrial-inoculated and shall conform to the following:

- A. Inoculated seed shall be inoculated in conformance with the provisions in Section 20-2.10, "Seed," of the Standard Specifications.
- B. Inoculated seed shall have a calcium carbonate coating.
- C. Industrial-inoculated seed shall be inoculated with Rhizobia and coated using an industrial process by a manufacturer whose principal business is seed coating and seed inoculation.
- D. Industrial-inoculated seed shall be sown within 180 calendar days after inoculation.
- E. Legume seed shall consist of the following:

#### LEGUME SEED

| Botanical Name<br>(Common Name)          | Percent Germination<br>(Minimum) | Kilograms Pure Live Seed Per Hectare<br>(Slope Measurement) |
|--|----------------------------------|---|
| Lupinus perenis<br>(Sundial Lupine)      | 60                               | 4.0   |
| Trifolium incarnatum<br>(Crimson Clover) | 60                               | 6.0   |

### Non-Legume Seed

Non-legume seed shall consist of the following:

| NON-LEGUME SEED   |                                  |   |
|---|----------------------------------|---|
| Botanical Name<br>(Common Name)                             | Percent Germination<br>(Minimum) | Kilograms Pure Live Seed Per Hectare<br>(Slope Measurement) |
| <i>Achillea millefolium</i><br>(White Yarrow)               | 50                               | 1.0   |
| <i>Eschscholzia californica</i><br>(California Poppy)       | 50                               | 2.0   |
| <i>Clarkia amoena</i><br>(Farewell to Spring)               | 50                               | 1.0   |
| <i>Hordeum brachyantherum</i><br>(California Meadow Barley) | 60                               | 12.0  |
| <i>Elymus glaucus</i> 'Berkeley'<br>(Blue Wildrye)          | 60                               | 12.0  |
| <i>Hordeum vulgare</i> 'UC 603'<br>(Cereal Barley)          | 60                               | 20.0  |
| <i>Festuca rubra</i> 'Molate'<br>(Molate Red Fescue)        | 60                               | 12.0  |
| <i>Vulpia microstachys</i><br>(Six Weeks Fescue)            | 60                               | 5.0   |

### Commercial Fertilizer

Commercial fertilizer shall conform to the provisions in Section 20-2.02, "Commercial Fertilizer," of the Standard Specifications and shall have a guaranteed chemical analysis of 6 percent nitrogen, 20 percent phosphoric acid and 20 percent water soluble potash.

### Straw

Straw shall conform to the provisions in Section 20-2.06, "Straw," of the Standard Specifications and these special provisions.

Wheat and barley straw shall be derived from irrigated crops.

Prior to delivery of wheat or barley straw to the project site, the Contractor shall provide the date of harvest and the name, address and telephone number of the grower.

Straw shall be derived from wheat or barley.

### Compost

Compost shall be derived from green material consisting of chipped, shredded or ground vegetation or clean processed recycled wood products or a Class A, exceptional quality biosolids composts, as required by the United States Environmental Protection Agency (EPA), 40 CFR, Part 503c regulations or a combination of green material and biosolids compost. The compost shall be processed or completed to reduce weed seeds, pathogens and deleterious material, and shall not contain paint, petroleum products, herbicides, fungicides or other chemical residues that would be harmful to plant or animal life. Other deleterious material, plastic, glass, metal or rocks shall not exceed 0.1 percent by weight or volume. A minimum internal temperature of 57°C shall be maintained for at least 15 continuous days during the composting process. The compost shall be thoroughly turned a minimum of 5 times during the composting process and shall go through a minimum 90-day curing period after the 15-day thermophilic compost process has been completed. Compost shall be screened through a maximum 9.5-mm screen. The moisture content of the compost shall not exceed 35 percent. Moisture content shall be determined by California Test 226. Compost products with a higher moisture content may be used provided the weight of the compost is increased to equal the compost with a moisture content of 35 percent. Compost will be tested for maturity and stability with a solvita test kit. The compost shall measure a minimum of 6 on the maturity and stability scale.

### Stabilizing Emulsion

Stabilizing emulsion shall conform to the provisions in Section 20-2.11, "Stabilizing Emulsion," of the Standard Specifications and these special provisions. Stabilizing emulsion shall be nonflammable and shall have an effective life of at least one year.

Stabilizing emulsion shall be in a dry powder form, may be reemulsifiable, and shall be a processed organic adhesive derivative of *Plantago ovata* used as a soil tackifier.

#### **APPLICATION**

Erosion control materials shall be applied in 3 separate applications in the following sequence:

- A. The following mixture in the proportions indicated shall be applied with hydro-seeding equipment within 30 minutes after the seed has been added to the mixture:

| Material              | Kilograms Per Hectare<br>(Slope Measurement) |
|-----------------------|--|
| Fiber                 | 170  |
| Non-Legume Seed       | 65.0   |
| Legume Seed           | 10.0   |
| Commercial Fertilizer | 200  |
| Compost               | 400  |

- B. Straw shall be applied at the rate of 4.0 tonnes per hectare based on slope measurements. Incorporation of straw will not be required.

- C. The following mixture in the proportions indicated shall be applied with hydro-seeding equipment:

| Material                      | Kilograms Per Hectare<br>(Slope Measurement) |
|-------------------------------|--|
| Fiber                         | 170  |
| Compost                       | 400  |
| Stabilizing Emulsion (Solids) | 135  |

- D. The ratio of total water to total stabilizing emulsion in the mixture shall be as recommended by the manufacturer.

Once straw work is started in an area, stabilizing emulsion applications shall be completed in that area on the same working day.

The proportions of erosion control materials may be changed by the Engineer to meet field conditions.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per kilogram for compost (erosion control) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying compost for erosion control, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.36 EXTEND IRRIGATION CROSSOVERS**

Extend existing irrigation crossovers shall conform to the provisions in Section 20-5, "Irrigation Systems," of the Standard Specifications and these special provisions.

Extend irrigation crossovers shall include conduit, water line crossover, and sprinkler control crossover extensions and appurtenances, locating existing irrigation crossovers and pressure testing existing and new water line crossovers. The sizes of conduit, water line crossover, and sprinkler control crossover extensions shall be as shown on the plans.

Before work is started in an area where an existing irrigation crossover conduit is to be extended, the existing conduit shall be located by the Contractor. When exploratory holes are used to locate the existing conduit, the exploratory holes shall be excavated in conformance with the provisions in Section 20-5.03B, "Conduit for Irrigation Crossovers," of the Standard Specifications.

If debris is encountered in the ends of conduits to be extended, the debris shall be removed prior to extending conduits. Removal of debris within the first meter in the conduits shall be at the Contractor's expense. If debris is encountered in the conduit more than one meter from the ends of the conduits to be extended, the additional debris shall be removed as directed by the Engineer and will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Prior to installation of water line crossover extensions, the existing water lines shall be pressure tested for leakage in conformance with the provisions in Section 20-5.03H, "Pressure Testing," of the Standard Specifications. Repairs to the existing water line crossover, when ordered by the Engineer, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Conduit extensions shall be bituminous coated corrugated steel pipe.

Water line crossover extensions shall be plastic pipe (PR 315) (supply line).

Sprinkler control crossover extensions shall be Type 3 electrical conduit.

Conductors shall be removed from existing sprinkler control crossovers to be extended.

After installation of the sprinkler control crossover extensions, new conductors shall be installed without splices in existing and extended sprinkler control crossovers. New conductors shall match the removed conductors in color and size and shall be spliced to the existing conductors in adjacent pull boxes. After the new conductors are installed, the conductors shall be tested in the same manner specified for traffic signal, sign illumination, and lighting circuits in conformance with the provisions in Section 86-2.14B, "Field Testing," of the Standard Specifications.

After water line crossover extensions have been installed, existing and extended water line crossovers shall be retested for leakage in conformance with the provisions in Section 20-5.03H, "Pressure Testing," of the Standard Specifications. Leaks that develop shall be repaired at the Contractor's expense and the water line crossovers shall be retested until a satisfactory pressure test is achieved.

### **10-1.37 SOIL TREATMENT**

Soil shall be treated in those areas to be surfaced with concrete pavers and the maintenance vehicle pullouts in conformance with these special provisions.

Pesticides used for soil treatment shall conform to the provisions in Section 20-4.026, "Pesticides," of the Standard Specification, except recommendations from a Pest Control Adviser will not be required.

Immediately prior to treatment, the soil shall be scarified to a minimum depth of 75 mm and rocks, large lumps of earth, weeds, and other debris shall be removed and disposed of. Removed material shall be disposed of in conformance with the provisions in "Aerially Deposited Lead" and "Earthwork" of these special provisions. The loosened material shall then be brought to as finely divided condition as the material will permit.

After scarification, the soil shall be sterilized with one of the following pesticides applied at the maximum label rate unless otherwise directed by the Engineer:

- A. Trifluralin emulsifiable concentrate.
- B. Dichlobenil.

Pesticides shall be mixed in conformance with the manufacturer's recommendations and shall be applied by a device approved by the Engineer. Pesticides shall not be applied more than 8 hours prior to placing asphalt concrete surfacing. Pesticides shall not be applied more than 300 mm beyond the areas to be surfaced.

Treated areas shall be thoroughly compacted by use of power rollers. When power rollers cannot be operated in certain areas due to the shape or size of the areas, compaction shall be obtained by hand rollers, impactors or other methods approved by the Engineer.

Full compensation for treating soil shall be considered as included in the contract price paid for the concrete pavers areas and maintenance vehicle pullouts involved and no additional compensation will be allowed therefor.

### **10-1.38 CONCRETE PAVERS**

Concrete pavers for concrete paver areas shall be constructed as shown on the plans and in conformance with these special provisions.

The Contractor shall submit 2 sets of working drawings to the Engineer for approval, as provided in Section 5-1.02, "Plans and Working Drawings" of the Standard Specifications. The working drawings shall be at a sufficient scale to show the interlace pattern area. A full size sample of each size and color of paver, shall be submitted to the Engineer.

Concrete pavers shall not be placed on the project prior to written approval by the Engineer.

### **EARTHWORK**

Earthwork shall conform to the provisions in "Earthwork," elsewhere, and these special provisions.

The grading plane shall not be more than 15 mm above the grade established by the Engineer.

A relative compaction of not less than 95 percent shall be obtained for a minimum depth of 150 mm below the grading plane.

### **SOIL TREATMENT**

A soil sterilant shall be applied to those areas that are to receive concrete pavers. Soil sterilant and the application thereof shall conform to the provisions in "Soil Treatment" of these special provisions.

## **AGGREGATE BASE**

Aggregate for aggregate base shall conform to the provisions specified for 19-mm, Maximum, aggregate grading in Section 26-1.02A, "Class 2 Aggregate Base," of the Standard Specifications.

Aggregate base shall be a minimum of 150 mm thick. Aggregate base shall be spread and compacted in conformance with the provisions in Section 26-1.04, "Spreading," and Section 26-1.05, "Compacting," of the Standard Specifications.

## **SAND**

Sand for sand base shall be free from clay or organic material, suitable for the purpose intended, and shall be of such size that 90 percent to 100 percent will pass a 4.75-mm sieve and not more than five percent will pass a 75- $\mu$ m sieve.

Sand base shall have a depth of 25 mm. Sand joints shall be 3 mm with a tolerance of one millimeter.

## **CONCRETE BAND**

A concrete band shall be constructed at the border of concrete paver areas as shown on the plans and shall conform to the provisions of Section 90-10 "Minor Concrete" and Section 73 "Concrete Curbs and Sidewalks" of the Standard Specifications and these special provisions.

## **ASPHALT CONCRETE**

Asphalt concrete for miscellaneous fill shall conform to the following material requirements:

- A. Asphalt concrete shall be produced at a central mixing plant.
- B. Paving asphalt and aggregates shall be commercial quality.
- C. The amount of asphalt binder to be mixed with the aggregate shall be between 5 percent and 10 percent by mass of the dry aggregate. The exact amount will be determined by the Engineer.
- D. The aggregate shall have a Sand Equivalent value of not less than 30.
- E. The aggregate shall conform to the 12.5-mm Maximum grading specified for Type B asphalt concrete in Section 39-2.02, "Aggregate," of the Standard Specifications.

A Certificate of Compliance for the asphalt concrete shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Asphalt concrete shall be spread at a temperature of not less than 121°C. Spreading shall be performed by methods that will produce an asphalt concrete surfacing of uniform smoothness and texture.

Asphalt concrete shall be placed and compacted over the aggregate base in 2 or more layers of approximately equal thickness.

Asphalt concrete shall be compacted with a power roller. Where power rollers cannot be operated, compaction shall be obtained by hand rollers or by an impactor.

## **CONCRETE PAVERS**

Concrete pavers shall be the interlocking type having an average minimum compressive strength of 55 MPa in accordance with ASTM Designation: C-936 and shall be the color and size as shown on the plans. A sample of each color of paver is available for review by bidders at the Office of Landscape Architecture, Department of Transportation, 111 Grand Avenue, Oakland, California.

Pavers shall be placed in the pattern as shown on plans.

Site conditions within the concrete paver areas may vary. The Contractor shall be responsible for site preparation and shall include, but not limited to adjusting existing pull boxes to finish grade within the concrete paver areas.

Gaps between concrete band and existing paved surfacing or dikes shall be filled with asphalt concrete.

Pavers shall be cut to fit around existing site features such as drain inlets, dikes, sign posts, and curbs.

Pavers shall be compacted into the sand base per the paver manufacturer's recommendation. After compaction, the pavers shall meet the required grade and have a uniform surface.

After compacting, the pavers shall be cleaned and prepared for sealing as recommended by the sealer manufacturer.

Pavers shall be sealed with a water based sealer recommended by the paver manufacturer.

Concrete pavers areas will be measured and paid for by the square meter as determined from the actual slope measurements of the areas covered by concrete pavers.

The contract price paid per square meter for concrete pavers shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing concrete paver areas, complete in place, including earthwork, aggregate base, sand base, concrete band, soil treatment, asphalt concrete fill, adjusting existing pull boxes, and concrete pavers, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.39 MAINTENANCE VEHICLE PULLOUT**

Maintenance vehicle pullouts shall be constructed as shown on the plans and in conformance with these special provisions.

#### **EARTHWORK**

Earthwork shall conform to the provisions in Section 19, "Earthwork," elsewhere in these special provisions.

The grading plane shall not be more than 15 mm above the grade established by the Engineer.

A relative compaction of not less than 95 percent shall be obtained for a minimum depth of 150 mm below the grading plane.

#### **SOIL TREATMENT**

A soil sterilant shall be applied to those areas that are to receive asphalt concrete. Soil sterilant and the application thereof shall conform to the provisions in "Soil Treatment" of these special provisions.

#### **AGGREGATE BASE**

Aggregate for aggregate base shall conform to the provisions specified for 19-mm, Maximum, aggregate grading in Section 26-1.02A, "Class 2 Aggregate Base," of the Standard Specifications.

Aggregate base shall be a minimum of 150 mm thick. Aggregate base shall be spread and compacted in conformance with the provisions in Section 26-1.04, "Spreading," and Section 26-1.05, "Compacting," of the Standard Specifications.

#### **ASPHALT CONCRETE**

Asphalt concrete for maintenance vehicle pullouts shall be a minimum 80 mm thick in compacted thickness and shall conform to the provisions in "Asphalt Concrete" of these special provisions, except the aggregate shall conform to the 12.5 mm maximum grading.

A Certificate of Compliance for the asphalt concrete shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Asphalt concrete shall be spread at a temperature of not less than 121°C. Spreading shall be performed by methods that will produce an asphalt concrete surfacing of uniform smoothness and texture.

Asphalt concrete shall be placed and compacted over the aggregate base in 2 or more layers of approximately equal thickness.

Asphalt concrete shall be compacted with a power roller. Where power rollers cannot be operated, compaction shall be obtained by hand rollers or by an impactor.

#### **MEASUREMENT**

The quantity of maintenance vehicle pullouts will be measured by the unit as determined from actual count in place.

#### **PAYMENT**

The contract unit price paid for maintenance vehicle pullout shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing maintenance vehicle pullouts, complete in place, including earthwork, soil treatment, aggregate base, and asphalt concrete, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.40 FINISHING ROADWAY**

Finishing roadway shall conform to the provisions in Section 22, "Finishing Roadway," of the Standard Specifications.

### **10-1.41 AGGREGATE SUBBASE**

Aggregate subbase shall be Class 4 and shall conform to the provisions in Section 25, "Aggregate Subbases," of the Standard Specifications and these special provisions.

The restriction that the amount of reclaimed material included in Class 4 aggregate subbase not exceed 50 percent of the total volume of the aggregate used shall not apply. Aggregate for Class 4 aggregate subbase may include reclaimed glass. Aggregate subbase incorporating reclaimed glass shall not be placed at locations where surfacing will not be placed over the aggregate subbase.

The percentage composition by mass of Class 4 aggregate subbase shall conform to the following grading requirements:

| Grading Requirements (Percentage Passing) |                 |                     |
|---|-----------------|---------------------|
| Sieve Sizes                               | Operating Range | Contract Compliance |
| 63 mm                                     | 100%            | 100%                |
| 4.75-mm                                   | 30%-65%         | 25%-70%             |
| 75-µm                                     | 0%-15%          | 0%-18%              |

Class 4 aggregate subbase shall also conform to the following quality requirements:

| Quality Requirements |                 |                     |
|----------------------|-----------------|---------------------|
| Test                 | Operating Range | Contract Compliance |
| Sand Equivalent      | 21 Min.         | 18 Min.             |
| Resistance (R-value) | ----            | 50 Min.             |

The provisions of the last 4 paragraphs in Section 25-1.02A, "Class 1, Class 2, and Class 3 Aggregate Subbases," of the Standard Specifications shall apply to Class 4 aggregate subbase.

At the option of the Contractor, Class 2 aggregate subbase conforming to the grading and quality requirements in Section 25-1.02A, may be used in place of Class 4 aggregate subbase. The restriction that the amount of reclaimed material included in Class 2 aggregate subbase not exceed 50 percent of the total volume of the aggregate used shall not apply. Aggregate for Class 2 aggregate subbase may include reclaimed glass. Aggregate subbase incorporating reclaimed glass shall not be placed at locations where surfacing will not be placed over the aggregate subbase. Once a class of aggregate subbase is selected, the class shall not be changed without written approval of the Engineer.

Regardless of the class of aggregate subbase supplied under the provisions of this section, payment for all aggregate subbase will be made as Class 4 aggregate subbase.

#### 10-1.42 ASPHALT CONCRETE

Asphalt concrete shall be open graded and Type A and shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

Open graded asphalt concrete may be placed when the atmospheric temperature is below 20°C, but above 13°C, provided the following requirements are met:

- A. The aggregate grading shall be 12.5-mm maximum.
- B. Open graded asphalt concrete shall not be placed in a windrow or stockpile. Open graded asphalt concrete shall be transferred directly from the hauling vehicle to the asphalt paver hopper.
- C. Open graded asphalt concrete shall be not less than 30 mm in compacted thickness.
- D. Immediately prior to adding the asphalt binder to the open graded asphalt concrete mixture, the temperature of the aggregate shall be not more than 135°C. Open graded asphalt concrete shall be spread at a temperature of not less than 105°C measured in the hopper in the asphalt paver.
- E. The compaction operation shall be such that the maximum distance between the asphalt paver and the initial breakdown rolling shall be no greater than 15 m.
- F. During the placement of open graded asphalt concrete, the speed of the asphalt paver shall not exceed 10 m per minute.
- G. The Contractor shall cover loads of open graded asphalt concrete with tarpaulins. The tarpaulins shall completely cover exposed open graded asphalt concrete in the hauling vehicle until the open graded asphalt concrete has been completely transferred into the asphalt paver hopper.

The amount of asphalt binder used in asphalt concrete placed in dikes shall be increased one percent by mass of the aggregate over the amount of asphalt binder determined for use in asphalt concrete placed on the traveled way.

The miscellaneous areas to be paid for at the contract price per square meter for place asphalt concrete (miscellaneous area), in addition to the prices paid for the materials involved, shall be limited to the areas listed on the plans.

Aggregate for asphalt concrete dikes shall be in conformance with the provisions for 9.5-mm Maximum grading in Section 39-2.02, "Aggregate," of the Standard Specifications.

If the Contractor selects the batch mixing method, asphalt concrete shall be produced by the automatic batch mixing method in conformance with the provisions in Section 39-3.03A(2), "Automatic Proportioning," of the Standard Specifications.

If the finished surface of the asphalt concrete on Route 80 traffic lanes does not meet the specified surface tolerances, the surfacing shall be brought within tolerance by either (1) abrasive grinding (with fog seal coat on the areas which have been ground), (2) removal and replacement or (3) placing an overlay of asphalt concrete. The method will be selected by the Engineer. The corrective work shall be at the Contractor's expense.

If abrasive grinding is used to bring the finished surface to the specified surface tolerances, additional grinding shall be performed, as necessary, to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel to, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within any ground area. Ground areas shall be neat rectangular areas of uniform surface appearance. Abrasive grinding shall conform to the provisions in the first paragraph and the last 4 paragraphs in Section 42-2.02, "Construction," of the Standard Specifications.

#### **10-1.43 REPLACE ASPHALT CONCRETE SURFACING**

This work shall consist of removing existing asphalt concrete surfacing and underlying base material and replacing the removed surfacing and base material with new asphalt concrete as shown on the plans and in conformance with these special provisions.

The exact limits of asphalt concrete surfacing to be removed and replaced will be determined by the Engineer.

Existing asphalt concrete surfacing and underlying base material removed during a work period shall be replaced before the time the lane is to be opened to public traffic in conformance with the provisions in "Maintaining Traffic" of these special provisions.

The outline of the asphalt concrete to be removed shall be cut on neat lines with a power-driven saw to a minimum depth of 46 mm before removing the surfacing. Surfacing and base shall be removed without damage to surfacing that is to remain in place. Damage to pavement which is to remain in place shall be repaired to a condition satisfactory to the Engineer or the damaged pavement shall be removed and replaced with new asphalt concrete if ordered by the Engineer. Repairing or removing and replacing pavement damaged outside the limits of pavement to be replaced shall be at the Contractor's expense and will not be measured nor paid for.

Removed materials shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The material remaining in place, after removing surfacing and base to the required depth, shall be graded to a plane, watered, and compacted. The finished surface of the remaining material shall not extend above the grade established by the Engineer.

Areas of the base material which are low as a result of over excavation shall be filled, at the Contractor's expense, with asphalt concrete.

Asphalt concrete shall conform to the provisions for asphalt concrete in "Asphalt Concrete" of these special provisions except for payment.

The quantity of replace asphalt concrete surfacing to be paid for will be measured by the cubic meter. The volume to be paid for will be calculated on the basis of the dimensions shown on the plans adjusted by the amount of any change ordered by the Engineer.

The contract price paid per cubic meter for replace asphalt concrete surfacing shall include full compensation for furnishing all labor, materials (including asphalt concrete), tools, equipment, and incidentals, and for doing all the work involved in replacing asphalt concrete surfacing, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

If the aggregates for the asphalt concrete did not meet the "Contract Compliance" requirements for Sand Equivalent or gradation and if the Contractor requests the material be accepted on the basis of a penalty, in conformance with the provisions in the Section 39-2.02, "Aggregate," of the Standard Specifications, and the Engineer approves the request, the penalty shall be \$4.58 per cubic meter.

#### **10-1.44 RUBBERIZED ASPHALT CONCRETE (TYPE G)**

Rubberized asphalt concrete (Type G) shall consist of furnishing and mixing gap graded aggregate and asphalt-rubber binder and spreading and compacting the mixture. Type G rubberized asphalt concrete shall conform, except as otherwise provided, to the provisions for Type A asphalt concrete in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

#### **GENERAL**

The Contractor shall furnish samples of aggregate to the Engineer in conformance with the provisions in Section 39-3.03, "Proportioning," of the Standard Specifications.



Aggregate for Type G rubberized asphalt concrete shall be of such quality that the optimum amount of asphalt-rubber binder to be mixed with the aggregate, as determined by the Engineer in conformance with the requirements in California Test 367 (as amended below), shall be a minimum of 7.0 percent by mass of dry aggregate and a maximum of 9.0 percent by mass of dry aggregate. Aggregates which result in an optimum asphalt-rubber binder content of less than 7.0 percent or more than 9.0 percent by mass of dry aggregate shall not be used. The Engineer will determine the exact amount of asphalt-rubber binder to be mixed with the aggregate in conformance with the requirements in California Test 367, except as follows:

- A. The specific gravity used in California Test 367, Section "B. Voids Content of Specimen," will be determined using California Test 308, Method A.
- B. California Test 367, Section "C. Optimum Bitumen Content," is revised as follows:
  1. Plot asphalt-rubber binder content versus void content for each specimen on Form TL-306 (Figure 3), and connect adjacent points with straight lines.
  2. From Figure 3 for Route 80 and the Route 780 ramps, select the theoretical asphalt-rubber binder content that has 5 percent voids. From Figure 3 for other ramps, select the theoretical asphalt-rubber binder content that has 4 percent voids.
  3. Record the asphalt-rubber binder content in Step 2 as the Optimum Bitumen Content (OBC).
  4. To establish a recommended range, use the Optimum Bitumen Content (OBC) as the high value and 0.3 percent less as the low value. Notwithstanding, the recommended range shall not extend below 7.0 percent nor shall the high value to establish the recommended range be above 9.0 percent. If the OBC is 7.0 percent, then there shall be no recommended range, and 7.0 percent shall be the recommended value.
- C. Laboratory mixing and compaction shall be in conformance with the requirements of California Test 304, except that the mixing temperature of the aggregate shall be between 149°C and 163°C. The compaction temperature of the combined mixture shall be between 143°C and 149°C.

The rubberized asphalt concrete mixture, composed of the aggregate proposed for use and the optimum amount of asphalt-rubber binder as determined in conformance with the requirements in California Test 367 modified above, shall conform to the following quality requirements:

#### RUBBERIZED ASPHALT CONCRETE MIXTURE

| Test Parameter                               | California Test | Requirement |
|--|-----------------|-------------|
| Stabilometer Value, Minimum                  | 304 and 366     | 23          |
| Voids in Mineral Aggregate, Percent, Minimum | See Note        | 18          |

Note: Voids in mineral aggregate test shall be determined as described in Asphalt Institute Mix Design Methods for Asphalt Concrete (MS-2).

The asphalt-rubber binder content of the rubberized asphalt concrete (Type G) will be determined by extraction tests in conformance with the requirements in California Test 362, or will be determined in conformance with the requirements in California Test 379.

The Contractor shall furnish a Certificate of Compliance to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each material used in asphalt-rubber binder and the asphalt-rubber binder mixture. The Certificate of Compliance shall certify that the material conforms to the provisions in these special provisions. When requested by the Engineer, the Contractor shall submit samples with the Certificate of Compliance. The Contractor shall provide the Engineer a Material Safety Data Sheet (MSDS) for each of the constituent components of the asphalt-rubber binder, for the completed mixture of asphalt-rubber binder and for the Type G rubberized asphalt concrete.

The Contractor shall provide a Certificate of Compliance for each truck load of crumb rubber modifier (CRM), paving asphalt, and asphalt modifier delivered to the project. The Quality Control Program used by the manufacturer of each ingredient shall include a sampling and testing frequency as shown below:

- A. CRM shall be tested, except for the grading requirement, at least once for every 225 tonnes of production, with a minimum of once for each project. CRM shall be tested for grading for every truck load delivered to the project.
- B. Paving asphalt shall be tested at least once for every 180 tonnes of production with a minimum of once for each project.
- C. Asphalt modifier shall be tested at least once for every 23 tonnes of production with a minimum of once for each project.

- D. A copy of the laboratory test results for the test parameters specified in these special provisions for CRM, paving asphalt, and asphalt modifier shall be submitted to the Engineer with the Certificate of Compliance for each truck load of individual material delivered to the project.

Certified volume or weight slips shall be delivered to the Engineer for the materials supplied.

### PAVING ASPHALT

The grade of paving asphalt to be used in the asphalt-rubber binder shall be AR-4000 and shall conform to the provisions in Section 92, "Asphalts," of the Standard Specifications and these special provisions.

The paving asphalt for use in asphalt-rubber binder shall be modified with an asphalt modifier.

### ASPHALT MODIFIER

The asphalt modifier shall be a resinous, high flash point, aromatic hydrocarbon compound and shall conform to the following requirements:

| ASPHALT MODIFIER   |                  |             |
|--|------------------|-------------|
| Test Parameter   | ASTM Designation | Requirement |
| Viscosity, m <sup>2</sup> /s (x10 <sup>-6</sup> ) at 100°C | D 445            | X ± 3*      |
| Flash Point, CL.O.C., °C                                   | D 92             | 207 min.    |
| Molecular Analysis:  |                  |             |
| Asphaltenes, percent by mass                               | D 2007           | 0.1 max.    |
| Aromatics, percent by mass                                 | D 2007           | 55 min.     |

\* The symbol "X" is the viscosity of the asphalt modifier the Contractor proposes to furnish. The value "X" which the Contractor proposes shall be between the limits 19 and 36 and shall be submitted in writing to the Engineer. A proposed change, requested by the Contractor, in the value "X" shall require a new asphalt-rubber binder design.

The asphalt modifier shall be proportionately added to the paving asphalt at the production site where the asphalt-rubber binder is blended and reacted. Asphalt modifier shall be added in an amount of 2.5 percent to 6.0 percent by mass of the paving asphalt based on the recommendation of the asphalt-rubber binder supplier. The paving asphalt shall be at a temperature of not less than 190°C or more than 226°C when the asphalt modifier is added. If the asphalt modifier is combined with the paving asphalt, before being blended with the CRM, the combined paving asphalt and asphalt modifier shall be mixed by circulation for a period of not less than 20 minutes. Premixing of asphalt modifier and paving asphalt will not be required when the ingredients of the asphalt-rubber binder are proportioned and mixed simultaneously. Asphalt modifier and paving asphalt shall be measured for proportioning with meters conforming to the provisions in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications.

### CRUMB RUBBER MODIFIER (CRM)

Crumb rubber modifier (CRM) shall consist of a combination of scrap tire CRM and high natural CRM. The scrap tire CRM shall consist of ground or granulated rubber derived from a combination of automobile tires, truck tires or tire buffings. The high natural CRM shall consist of ground or granulated rubber derived from materials that utilize high natural rubber sources.

Steel and fiber separation may be accomplished by any method. Cryogenic separation, if utilized, shall be performed separately from and prior to grinding or granulating.

CRM shall be ground or granulated at ambient temperature. Cryogenically produced CRM particles which can pass through the grinder or granulator without being ground or granulated respectively shall not be used.

CRM shall not contain more than 0.01-percent wire (by mass of CRM) and shall be free of other contaminants, except fabric. Fabric shall not exceed 0.05-percent by mass of CRM. The test and method for determining the percent by mass of wire and fabric is available at the Transportation Laboratory, Pavement Branch, Telephone 916-227-7300, and will be furnished to interested persons upon request. A Certificate of Compliance certifying these percentages shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

The length of an individual CRM particle shall not exceed 4.75 mm.

The CRM shall be sufficiently dry so that the CRM will be free flowing and not produce foaming when combined with the blended paving asphalt and asphalt modifier mixture. Calcium carbonate or talc may be added at a maximum amount of 3 percent by mass of CRM to prevent CRM particles from sticking together. The CRM shall have a specific gravity between 1.1 and 1.2 as determined by California Test 208. Scrap tire CRM and high natural CRM shall be delivered to the production site in separate bags and shall be sampled and tested separately. CRM material shall conform to the following requirements of ASTM Designation: D 297:

#### SCRAP TIRE CRUMB RUBBER MODIFIER

| Test Parameter         | Percent |      |
|------------------------|---------|------|
|                        | Min.    | Max. |
| Acetone Extract        | 6.0     | 16.0 |
| Ash Content            | —       | 8.0  |
| Carbon Black Content   | 28.0    | 38.0 |
| Rubber Hydrocarbon     | 42.0    | 65.0 |
| Natural Rubber Content | 22.0    | 39.0 |

#### HIGH NATURAL CRUMB RUBBER MODIFIER

| Test Parameter         | Percent |      |
|------------------------|---------|------|
|                        | Min.    | Max. |
| Acetone Extract        | 4.0     | 16.0 |
| Rubber Hydrocarbon     | 50.0    | —    |
| Natural Rubber Content | 40.0    | 48.0 |

The CRM for asphalt-rubber binder shall conform to the gradations specified below when tested in conformance with the requirements in ASTM Designation: C 136, except as follows:

- A. Split or quarter 100 g  $\pm$  5 g from the CRM sample and dry to a constant mass at a temperature of not less than 57°C or more than 63°C and record the dry sample mass. Place the CRM sample and 5.0 g of talc in a 0.5-L jar. Seal the jar, then shake it by hand for a minimum of one minute to mix the CRM and the talc. Continue shaking or open the jar and stir until particle agglomerates and clumps are broken and the talc is uniformly mixed.
- B. Place one rubber ball on each sieve. Each ball shall have a mass of 8.5 g  $\pm$  0.5 g, have a diameter of 24.5 mm  $\pm$  0.5 mm, and shall have a Shore Durometer "A" hardness of 50  $\pm$  5 in conformance with the requirements in ASTM Designation: D 2240. After sieving the combined material for 10 minutes  $\pm$  1 minute, disassemble the sieves. Material adhering to the bottom of a sieve shall be brushed into the next finer sieve. Weigh and record the mass of the material retained on the 2.36-mm sieve and leave this material (do not discard) on the scale or balance. Observed fabric balls shall remain on the scale or balance and shall be placed together on the side of the scale or balance to prevent the fabric balls from being covered or disturbed when placing the material from finer sieves onto the scale or balance. The material retained on the next finer sieve (2.00-mm sieve) shall be added to the scale or balance. Weigh and record that mass as the accumulative mass retained on that sieve (2.00-mm sieve). Continue weighing and recording the accumulated masses retained on the remaining sieves until the accumulated mass retained in the pan has been determined. Prior to discarding the CRM sample, separately weigh and record the total mass of fabric balls in the sample.
- C. Determine the mass of material passing the 75- $\mu$ m sieve (or mass retained in the pan) by subtracting the accumulated mass retained on the 75- $\mu$ m sieve from the accumulated mass retained in the pan. If the material passing the 75- $\mu$ m sieve (or mass retained in the pan) has a mass of 5 g or less, cross out the recorded number for the accumulated mass retained in the pan and copy the number recorded for the accumulated mass retained on the 75- $\mu$ m sieve and record that number (next to the crossed out number) as the accumulated mass retained in the pan. If the material passing the 75- $\mu$ m sieve (or mass retained in the pan) has a mass greater than 5 g, cross out the recorded number for the accumulated mass retained in the pan, subtract 5 g from that number and record the difference next to the crossed out number. The adjustment to the accumulated mass retained in the pan is made to account for the 5 g of talc added to the sample. For calculation purposes, the adjusted total sample mass is the same as the adjusted accumulated mass retained in the pan. Determine the percent passing based on the adjusted total sample mass and record to the nearest 0.1 percent.

### CRM GRADATIONS

| Sieve Size | Scrap Tire CRM Percent Passing | High Natural CRM Percent Passing |
|------------|--------------------------------|----------------------------------|
| 2.36-mm    | 100                            | 100                              |
| 2.00-mm    | 98-100                         | 100                              |
| 1.18-mm    | 45-75                          | 95-100                           |
| 600-μm     | 2-20                           | 35-85                            |
| 300-μm     | 0-6                            | 10-30                            |
| 150-μm     | 0-2                            | 0-4                              |
| 75-μm      | 0                              | 0-1                              |

### ASPHALT-RUBBER BINDER

Asphalt-rubber binder shall consist of a mixture of paving asphalt, asphalt modifier, and crumb rubber modifier.

At least 2 weeks before the binder's intended use, the Contractor shall furnish the Engineer 4 one-liter cans filled with the asphalt-rubber binder proposed for use on the project. The Contractor shall supply the Engineer, for approval, a binder formulation and samples of the materials to be used in the asphalt-rubber binder at least 2 weeks before construction is scheduled to begin. The binder formulations shall consist of the following information:

#### A. Paving Asphalt and Modifiers:

1. Source and grade of paving asphalt.
2. Source and identification (or type) of modifiers used.
3. Percentage of asphalt modifier by mass of paving asphalt.
4. Percentage of the combined blend of paving asphalt and asphalt modifier by total mass of asphalt-rubber binder to be used.
5. Laboratory test results for test parameters shown in these special provisions.

#### B. Crumb Rubber Modifier (CRM):

1. Source and identification (or type) of scrap tire and high natural CRM.
2. Percentage of scrap tire and high natural CRM by total mass of the asphalt-rubber blend.
3. If CRM from more than one source is used, the above information will be required for each CRM source used.
4. Laboratory test results for test parameters shown in these special provisions.

#### C. Asphalt-Rubber Binder:

1. Laboratory test results of the proposed blend for test parameters shown in these special provisions.
2. The minimum reaction time and temperature.

The method and equipment for combining paving asphalt, asphalt modifier, and CRM shall be so designed and accessible that the Engineer can readily determine the percentages by mass for each material being incorporated into the mixture.

The proportions of the materials, by total mass of asphalt-rubber binder, shall be 80 percent  $\pm$  2 percent combined paving asphalt and asphalt modifier, and 20 percent  $\pm$  2 percent CRM. However, the minimum amount of CRM shall not be less than 18.0 percent. Lower values which are rounded up shall not be allowed. The CRM shall be combined at the production site and shall contain 75 percent  $\pm$  2 percent scrap tire CRM and 25 percent  $\pm$  2 percent high natural CRM, by mass.

The paving asphalt and asphalt modifier shall be combined into a blended mixture that is chemically compatible with the crumb rubber modifier to be used. The blended mixture is considered to be chemically compatible when it meets the provisions for asphalt-rubber binder (after reacting) found in these special provisions.

The blended paving asphalt and asphalt modifier mixture, and the CRM shall be combined and mixed together at the production site in a blender unit to produce a homogeneous mixture.

The temperature of the blended paving asphalt and asphalt modifier mixture shall be not less than 190°C nor more than 226°C when the CRM is added. The combined materials shall be reacted for a minimum of 45 minutes after incorporation of the CRM at a temperature of not less than 190°C nor more than 218°C. The temperature shall not be higher than 6°C below the actual flash point of the asphalt-rubber binder.

After reacting, the asphalt-rubber binder shall conform to the following requirements:

#### ASPHALT-RUBBER BINDER

| Test Parameter                                 | ASTM Test Method | Requirement |      |
|--|------------------|-------------|------|
|  |                  | Min.        | Max. |
| Cone Penetration @ 25°C, 1/10 mm               | D 217            | 25          | 70   |
| Resilience @ 25°C, Percent rebound             | D 3407           | 18          | —    |
| Field Softening Point, °C                      | D 36             | 52          | 74   |
| Viscosity @ 190°C, Pa • s ( $\times 10^{-3}$ ) | See Note         | 1500        | 4000 |

NOTE: The viscosity test shall be conducted using a hand held Haake Viscometer Model VT-02 with Rotor 1, 24 mm in depth x 53 mm in height, or equivalent, as determined by the Engineer. The accuracy of the viscometer shall be verified by comparing the viscosity results obtained with the hand held viscometer to 3 separate calibration fluids of known viscosities ranging from 1000 to 5000 Pa • s ( $\times 10^{-3}$ ). The viscometer will be considered accurate if the values obtained are within 300 Pa • s ( $\times 10^{-3}$ ) of the known viscosity. The known viscosity value shall be based on the fluid manufacturers standard test temperature or the test temperature versus viscosity correlation table provided by the fluid manufacturer. Viscometers used on the project shall be verified to be accurate. The test method for determining the viscosity of asphalt-rubber binder using a hand held viscometer is available at the Transportation Laboratory, Pavement Branch, Telephone (916) 227-7300. The accuracy verification results shall be provided to the Engineer and shall be certified by a Certificate of Compliance. The Certificate of Compliance shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

The Contractor shall provide a Haake Viscometer, or equivalent, at the production site during combining of asphalt-rubber binder materials. The Contractor shall take viscosity readings of asphalt-rubber binder from samples taken from the feed line connecting the storage and reaction tank to the asphalt concrete plant. Readings shall be taken at least every hour with not less than one reading for each batch of asphalt-rubber binder. The Contractor shall log these results, including time and asphalt-rubber binder temperature, and a copy of the log shall be submitted to the Engineer on a daily basis. As determined by the Engineer, the Contractor shall either notify the Engineer at least 15 minutes prior to each test or provide the Engineer a schedule of testing times.

The reacted asphalt-rubber binder shall be maintained at a temperature of not less than 190°C nor more than 218°C.

If any of the material in a batch of asphalt-rubber binder is not used within 4 hours after the 45-minute reaction period, heating of the material shall be discontinued. Any time the asphalt-rubber binder cools below 190°C and is reheated shall be considered a reheat cycle. The total number of reheat cycles shall not exceed 2. The material shall be uniformly reheated to a temperature of not less than 190°C nor more than 218°C prior to use. Additional scrap tire CRM may be added to the reheated binder and reacted for a minimum of 45 minutes. The cumulative amount of additional scrap tire CRM shall not exceed 10 percent of the total binder mass. Reheated asphalt-rubber binder shall conform to the provisions for asphalt-rubber binder.

#### EQUIPMENT FOR PRODUCTION OF ASPHALT-RUBBER BINDER

The Contractor shall utilize the following equipment for production of asphalt-rubber binder:

- A. An asphalt heating tank equipped to heat and maintain the blended paving asphalt and asphalt modifier mixture at the necessary temperature before blending with the CRM. This unit shall be equipped with a thermostatic heat control device and a temperature reading device and shall be accurate to within  $\pm 3^\circ\text{C}$  and shall be of the recording type.
- B. A mechanical mixer for the complete, homogeneous blending of paving asphalt, asphalt modifier, and CRM. Paving asphalt and asphalt modifier shall be introduced into the mixer through meters conforming to the provisions in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications. The blending system shall be capable of varying the rate of delivery of paving asphalt and asphalt modifier proportionate with the delivery of CRM. During the proportioning and blending of the liquid ingredients, the temperature of paving asphalt and the asphalt modifier shall not vary more than  $\pm 14^\circ\text{C}$ . The paving asphalt feed, the asphalt modifier feed, and CRM feed shall be equipped with devices by which the rate of feed can be determined during the proportioning operation. Meters used for proportioning individual ingredients shall be equipped with rate-of-flow indicators to show the rates of delivery and resettable totalizers so that the total amounts of liquid ingredients introduced into the mixture can be determined. The liquid and dry ingredients shall be fed directly into the mixer at a uniform and controlled rate. The rate of feed to the mixer shall not exceed that which will permit complete mixing of the materials. Dead areas in the mixer, in which the material does not move or is not sufficiently agitated, shall be corrected by a reduction in the

volume of material or by other adjustments. Mixing shall continue until a homogeneous mixture of uniformly distributed and properly blended asphalt-rubber binder of unchanging appearance and consistency is produced. The Contractor shall provide a safe sampling device capable of delivering a representative sample of the completed asphalt-rubber binder of sufficient size to permit the required tests.

- C. An asphalt-rubber binder storage tank equipped with a heating system furnished with a temperature reading device to maintain the proper temperature of the asphalt-rubber binder and an internal mixing unit capable of maintaining a homogeneous mixture of paving asphalt, asphalt modifier, and CRM.

The equipment shall be approved by the Engineer prior to use.

## AGGREGATE

The aggregate for Type G rubberized asphalt concrete shall conform to the following grading and shall meet the quality provisions specified for Type A asphalt concrete in Section 39-2.02, "Aggregate," of the Standard Specifications, except as follows:

- A. California Test 211, Los Angeles Rattler loss at 500 revolutions shall be 40 percent maximum.
- B. California Test 205, Section D, definition of a crushed particle is revised as follows: "A particle having 2 or more fresh mechanically fractured faces shall be considered a crushed particle."
- C. The swell and moisture vapor susceptibility requirements shall not apply.

The symbol "X" in the following table is the gradation which the Contractor proposes to furnish for the specific sieve.

Aggregate Grading Requirements  
Percentage Passing  
19-mm maximum

| Sieve Size | Limits of Proposed Gradation | Operating Range | Contract Compliance |
|------------|------------------------------|-----------------|---------------------|
| 25-mm      | —                            | 100             | 100                 |
| 19-mm      | —                            | 95-100          | 90-100              |
| 12.5-mm    | 83-87                        | X±5             | X±7                 |
| 9.5-mm     | 65-70                        | X±5             | X±7                 |
| 4.75-mm    | 33-37                        | X±5             | X±7                 |
| 2.36-mm    | 18-22                        | X±4             | X±5                 |
| 600-µm     | 8-12                         | X±4             | X±5                 |
| 75-µm      | —                            | 2-7             | 0-8                 |

## PROPORTIONING, SPREADING AND COMPACTING

When batch type asphalt concrete plants are used to produce Type G rubberized asphalt concrete, the asphalt-rubber binder and mineral aggregate shall be proportioned by mass.

When continuous mixing type asphalt concrete plants are used to produce Type G rubberized asphalt concrete, the asphalt-rubber binder shall be proportioned by an asphalt meter of the mass flow, Coriolis effect type. The meter shall have been Type-approved by the Division of Measurement Standards prior to the start of production. The meter shall be calibrated in conformance with the requirements in California Test 109. The meter shall be interfaced with the existing continuous mixing plant controller in use on the asphalt concrete plant.

Type G rubberized asphalt concrete shall be placed only when the atmospheric and pavement surface temperatures are 13°C or above.

When the atmospheric and pavement surface temperature is 18°C or higher, the following shall apply:

- A. The temperature of the aggregate shall not be greater than 163°C at the time the asphalt-rubber binder is added to the aggregate.
- B. Type G rubberized asphalt concrete shall be spread at a temperature of not less than 138°C or more than 163°C, measured in the mat directly behind the paving machine.
- C. The first coverage of initial or breakdown compaction shall be performed when the temperature of the Type G rubberized asphalt concrete is not less than 135°C. Breakdown compaction shall be completed before the temperature of the Type G rubberized asphalt concrete drops below 121°C.

When the atmospheric or pavement surface temperature is below 18°C, the following shall apply:

- A. The temperature of the aggregate shall not be less than 149°C nor more than 163°C at the time the asphalt-rubber binder is added to the aggregate.
- B. The Contractor shall cover the loads of Type G rubberized asphalt concrete with tarpaulins. The tarpaulins shall completely cover the exposed Type G rubberized asphalt concrete until the Type G rubberized asphalt concrete has been completely transferred into the asphalt concrete paver hopper or deposited on the roadbed.
- C. Type G rubberized asphalt concrete shall be spread at a temperature of not less than 143°C nor more than 163°C, measured in the mat directly behind the paving machine.
- D. The first coverage of initial or breakdown compaction shall be performed when the temperature of the Type G rubberized asphalt concrete is not less than 138°C. Breakdown compaction shall be completed before the temperature of the Type G rubberized asphalt concrete drops below 127°C.

Pneumatic tired rollers shall not be used to compact Type G rubberized asphalt concrete.

Alternative compacting equipment conforming to the provisions in Section 39-6.03, "Compacting," of the Standard Specifications shall be used to compact the Type G rubberized asphalt concrete.

Traffic shall not be allowed on the Type G rubberized asphalt concrete until final rolling operations have been completed and sand has been applied to the surface.

Sand shall be spread on the surface of Type G rubberized asphalt concrete at a rate of 0.5 kg/m<sup>2</sup> to 1.0 kg/m<sup>2</sup>. The exact rate will be determined by the Engineer. When ordered by the Engineer excess sand shall be removed from the pavement surface by sweeping. Sand shall be free from clay or organic material. Sand shall conform to the fine aggregate grading provisions in Section 90-3.03, "Fine Aggregate Grading," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Rubberized asphalt concrete (Type G) will be measured and paid for by the tonne in the same manner specified for asphalt concrete in Section 39-8, "Measurement and Payment," of the Standard Specifications.

Full compensation for furnishing and spreading sand on the rubberized asphalt concrete surface and for sweeping and removing excess sand from the pavement surface shall be considered as included in the contract price paid per tonne for rubberized asphalt concrete (Type G) and no separate payment will be made therefor.

## **10-1.45 PILING**

### **GENERAL**

Piling shall conform to the provisions in Section 49, "Piling," of the Standard Specifications, and these special provisions.

Unless otherwise specified, welding of any work performed in conformance with the provisions in Section 49, "Piling," of the Standard Specifications, shall be in conformance with the requirements in AWS D1.1.

Attention is directed to "Welding Quality Control" of these special provisions.

Section 49-1.05, "Driving Equipment," of the Standard Specifications is amended by adding the following paragraph after the seventh paragraph:

- The use of followers or underwater hammers for driving piles will be permitted if authorized in writing by the Engineer. When a follower or underwater hammer is used, its efficiency shall be verified by furnishing the first pile in each bent or footing sufficiently long and driving the pile without the use of a follower or underwater hammer.

The first and second paragraphs of Section 49-4.01, "Description," of the Standard Specifications are amended to read:

- Cast-in-place concrete piles shall consist of one of the following:
  - A. Steel shells driven permanently to the required bearing value and penetration and filled with concrete.
  - B. Steel casings installed permanently to the required penetration and filled with concrete.
  - C. Drilled holes filled with concrete.
  - D. Rock sockets filled with concrete.
- The drilling of holes shall conform to the provisions in these specifications. Concrete filling for cast-in-place concrete piles is designated by compressive strength and shall have a minimum 28-day compressive strength of 25 MPa. At the option of the Contractor, the combined aggregate grading for the concrete shall be either the 25-mm maximum grading, the 12.5-mm maximum grading, or the 9.5-mm maximum grading. Concrete shall conform to

the provisions in Section 90, "Portland Cement Concrete," and Section 51, "Concrete Structures." Reinforcement shall conform to the provisions in Section 52, "Reinforcement."

### CAST-IN-DRILLED-HOLE CONCRETE PILES

Cast-in-drilled-hole concrete piling shall conform to the provisions in Section 49-4, "Cast-In-Place Concrete Piles," of the Standard Specifications and these special provisions.

The fourth paragraph of Section 49-4.03, "Drilled Holes," of the Standard Specifications is amended to read:

- After placing reinforcement and prior to placing concrete in the drilled hole, if caving occurs or deteriorated foundation material accumulates on the bottom of the hole, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

The provisions of "Welding Quality Control" of these special provisions shall not apply to temporary steel casings.

Cast-in-drilled-hole concrete piles 600 mm in diameter or larger may be constructed by excavation and depositing concrete under slurry.

### Materials

Concrete deposited under slurry shall have a nominal penetration equal to or greater than 90 mm. Concrete shall be proportioned to prevent excessive bleed water and segregation.

Concrete deposited under slurry shall contain not less than 400 kg of cement per cubic meter.

Gradations proposed by the Contractor for cast-in-drilled-hole concrete piling shall be within the following percentage passing limits:

| Primary Aggregate Nominal Size | Sieve Sizes | Limits of Proposed Gradation |
|--------------------------------|-------------|------------------------------|
| 25-mm x 4.75-mm                | 19-mm       | 52 - 85                      |
| 25-mm x 4.75-mm                | 9.5-mm      | 15 - 38                      |
| 12.5-mm x 4.75-mm              | 9.5-mm      | 40 - 78                      |
| 9.5-mm x 2.36-mm               | 9.5-mm      | 50 - 85                      |

The grading requirements for coarse aggregates for cast-in-drilled-hole concrete piling are shown in the following table for each size of coarse aggregate:

| Sieve Sizes | Percentage Passing Primary Aggregate Nominal Sizes |                     |                   |                     |                  |                     |
|-------------|--|---------------------|-------------------|---------------------|------------------|---------------------|
|             | 25-mm x 4.75-mm                                    |                     | 12.5-mm x 4.75-mm |                     | 9.5-mm x 2.36-mm |                     |
|             | Operating Range                                    | Contract Compliance | Operating Range   | Contract Compliance | Operating Range  | Contract Compliance |
| 37.5-mm     | 100  | 100                 |                   |                     |                  |                     |
| 25-mm       | 88 - 100   | 86 - 100            |                   |                     |                  |                     |
| 19-mm       | X ± 15   | X ± 22              | 100               | 100                 |                  |                     |
| 12.5-mm     |  |                     | 82 - 100          | 80 - 100            | 100              | 100                 |
| 9.5-mm      | X ± 15   | X ± 22              | X ± 15            | X ± 22              | X ± 15           | X ± 20              |
| 4.75-mm     | 0 - 16   | 0 - 18              | 0 - 15            | 0 - 18              | 0 - 25           | 0 - 28              |
| 2.36-mm     | 0 - 6  | 0 - 7               | 0 - 6             | 0 - 7               | 0 - 6            | 0 - 7               |



The combined aggregate grading used in concrete for cast-in-drilled-hole concrete piling shall be either the 25-mm maximum grading, the 12.5-mm maximum grading, or the 9.5-mm maximum grading:

| Grading Limits of Combined Aggregate |                    |              |             |
|--------------------------------------|--------------------|--------------|-------------|
| Sieve Sizes                          | Percentage Passing |              |             |
|                                      | 25-mm Max.         | 12.5-mm Max. | 9.5-mm Max. |
| 37.5-mm                              | 100                |              |             |
| 25-mm                                | 90 - 100           |              |             |
| 19-mm                                | 55 - 100           | 100          | 100         |
| 12.5-mm                              |                    | 90 - 100     | 100         |
| 9.5-mm                               | 45 - 75            | 55 - 86      | 50 - 100    |
| 4.75-mm                              | 35 - 60            | 45 - 63      | 45 - 63     |
| 2.36-mm                              | 27 - 45            | 35 - 49      | 35 - 49     |
| 1.18-mm                              | 20 - 35            | 25 - 37      | 25 - 37     |
| 600-µm                               | 12 - 25            | 15 - 25      | 15 - 25     |
| 300-µm                               | 5 - 15             | 5 - 15       | 5 - 15      |
| 150-µm                               | 1 - 8              | 1 - 8        | 1 - 8       |
| 75-µm                                | 0 - 4              | 0 - 4        | 0 - 4       |

All references in the Standard Specifications to the aggregate grading tables in Section 90-3, "Aggregate Gradings, " of the Standard Specifications, shall also apply to the aggregate grading tables specified herein.

Portions of cast-in-drilled-hole concrete piles shown on the plans to be formed shall be formed and finished in conformance with the provisions for concrete structures in Section 51, "Concrete Structures," of the Standard Specifications.

### Construction

The Contractor shall submit a placing plan to the Engineer for approval prior to producing the test batch for cast-in-drilled-hole concrete piling and at least 10 working days prior to constructing piling. The plan shall include complete description, details, and supporting calculations as listed below:

#### A. Requirements for all cast-in-drilled hole concrete piling:

1. Concrete mix design, certified test data, and trial batch reports.
2. Drilling methods and equipment.
3. Proposed method for casing installation and removal when necessary.
4. Plan view drawing of pile showing reinforcement and inspection pipes, if required.
5. Methods for placing, positioning, and supporting bar reinforcement.
6. Methods and equipment for accurately determining the depth of concrete and actual and theoretical volume placed, including effects on volume of concrete when any casings are withdrawn.
7. Methods and equipment for verifying that the bottom of the drilled hole is clean prior to placing concrete.

#### B. Additional requirements when concrete is placed under slurry:

1. Concrete batching, delivery, and placing systems including time schedules and capacities therefor. Time schedules shall include the time required for each concrete placing operation at each pile.
2. Concrete placing rate calculations. When requested by the Engineer, calculations shall be based on the initial pump pressures or static head on the concrete and losses throughout the placing system, including anticipated head of slurry and concrete to be displaced.
3. Suppliers test reports on the physical and chemical properties of the slurry and any proposed slurry chemical additives including Material Safety Data Sheet.
4. Slurry testing equipment and procedures.
5. Removal and disposal of excavation, slurry, and contaminated concrete, including methods and rates of removal.
6. Slurry agitating, recirculating, and cleaning methods and equipment.

In addition to compressive strength requirements, the consistency of the concrete to be deposited under slurry shall be verified before use by producing a batch to be tested. The test batch shall be produced and delivered to the project under conditions and in time periods similar to those expected during the placement of concrete in the piles. Concrete for the test

batch shall be placed in an excavated hole or suitable container of adequate size to allow testing in conformance with California Test 533. Depositing of test batch concrete under slurry will not be required. The test batch shall demonstrate that the proposed concrete mix design achieves both the specified nominal penetration and a penetration of at least 50 mm after twice the time required for each concrete placing operation at each pile, as submitted in the placing plan, has elapsed. The time period shall begin at the start of placement. The concrete shall not be vibrated or agitated during the test period. Upon completion of testing, the concrete shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Concrete deposited under slurry shall not be vibrated until all temporary casing is removed and concrete contaminated with soil, slurry, or other materials is removed. Concrete deposited under slurry shall be vibrated in the upper 2 m of the pile.

The concrete deposited under slurry shall be carefully placed in a compact, monolithic mass and by a method that will prevent washing of the concrete. Placing concrete shall be a continuous operation lasting not more than the time required for each concrete placing operation at each pile, as submitted in the placing plan, unless otherwise approved in writing by the Engineer. The concrete shall be placed with concrete pumps and delivery tube system of adequate number and size to complete the placing of concrete in the time specified. The delivery tube system shall consist of one of the following:

- A. A tremie tube or tubes, each of which are at least 250 mm in diameter, fed by one or more concrete pumps.
- B. One or more concrete pump tubes, each fed by a single concrete pump.

The delivery tube system shall consist of watertight tubes with sufficient rigidity to keep the ends always in the mass of concrete placed. If only one delivery tube is utilized to place the concrete, the tube shall be placed near the center of the drilled hole. Multiple tubes shall be uniformly spaced in the hole. Internal bracing for the steel reinforcing cage shall accommodate the delivery tube system. Tremies shall not be used for piles without space for a 250-mm tube.

Spillage of concrete into the slurry during concrete placing operations shall not be allowed. Delivery tubes shall be capped with a water tight cap, or plugged above the slurry level with a good quality, tight fitting, moving plug that will expel the slurry from the tube as the tube is charged with concrete. The cap or plug shall be designed to be released as the tube is charged. The pump discharge or tremie tube shall extend to the bottom of the hole before charging the tube with concrete. After charging the delivery tube system with concrete, the flow of concrete through a tube shall be induced by slightly raising the discharge end. During concrete placement, the tip of the delivery tube shall be maintained to prevent reentry of the slurry into the tube. Until at least 3 m of concrete has been placed, the tip of the delivery tube shall be within 150 mm of the bottom of the drilled hole, and then the embedment of the tip shall be maintained at least 3 m below the top surface of the concrete. Rapid raising or lowering of the delivery tube shall not be permitted. If the seal is lost or the delivery tube becomes plugged and must be removed, the tube shall be withdrawn, the tube cleaned, the tip of the tube capped to prevent entrance of the slurry, and the operation restarted by pushing the capped tube 3 m into the concrete and then reinitiating the flow of concrete.

When slurry is used, the slurry level shall be maintained within 300 mm of the top of the drilled hole.

When slurry is used, a fully operational standby concrete pump, adequate to complete the work in the time specified, shall be provided at the site during concrete placement.

A log of the placing of the concrete in each drilled hole shall be maintained by the Contractor when concrete is deposited under slurry. The log shall show the pile location, tip elevation, dates of excavation and concrete placement, total quantity of concrete deposited, length and tip elevation of any casing, and details of any hole stabilization method and materials used. The log shall include a 215 mm x 280 mm sized graph of the concrete placed versus depth of hole filled. The graph shall be plotted continuously throughout placing of concrete. The depth of drilled hole filled shall be plotted vertically with the pile tip oriented at the bottom and the quantity of concrete shall be plotted horizontally. Readings shall be made at least at each 1.5 m of pile depth, and the time of the reading shall be indicated. The graph shall be labeled with the pile location, tip elevation, cutoff elevation, and the dates of excavation and concrete placement. The log shall be delivered to the Engineer within one working day of completion of placing concrete in the pile.

After placing reinforcement and prior to placing concrete in the drilled hole, if drill cuttings settle out of slurry, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

If temporary casing is used, concrete placed under slurry shall be maintained at a level at least 1.5 m above the bottom of the casing. The withdrawal of casings shall not cause contamination of the concrete with slurry.

Material resulting from using slurry shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **Acceptance Testing and Mitigation**

Vertical inspection pipes for acceptance testing shall be provided in all cast-in-drilled-hole concrete piles that are 600 mm in diameter or larger, except when the holes are dry or when the holes are dewatered without the use of temporary casing to control the groundwater.

Inspection pipes shall be Schedule 40 polyvinyl chloride pipe with a nominal inside diameter of 50 mm. Each inspection pipe shall be capped top and bottom and shall have watertight couplers to provide a clean, dry and unobstructed 50-mm diameter clear opening from 1.0 m above the pile cutoff down to the bottom of the reinforcing cage.

If the Contractor drills the hole below the specified tip elevation, the reinforcement and the inspection pipes shall be extended to 75 mm clear of the bottom of the drilled hole.

Inspection pipes shall be placed around the pile, inside the outermost spiral or hoop reinforcement, and 75 mm clear of the vertical reinforcement, at a uniform spacing not exceeding 840 mm measured along the circle passing through the centers of inspection pipes. A minimum of 2 inspection pipes per pile shall be used. When the vertical reinforcement is not bundled and each bar is not more than 26 mm in diameter, inspection pipes may be placed 50 mm clear of the vertical reinforcement. The inspection pipes shall be placed to provide the maximum diameter circle that passes through the centers of the inspection pipes while maintaining the clear spacing required herein. The pipes shall be installed in straight alignment, parallel to the main reinforcement, and securely fastened in place to prevent misalignment during installation of the reinforcement and placing of concrete in the hole.

The Contractor shall log the location of the inspection pipe couplers with respect to the plane of pile cut off, and these logs shall be delivered to the Engineer upon completion of the placement of concrete in the drilled hole.

After placing concrete and before requesting acceptance tests, each inspection pipe shall be tested by the Contractor in the presence of the Engineer by passing a 48.3-mm diameter rigid cylinder 610 mm long through the complete length of pipe. If the 48.3-mm diameter rigid cylinder fails to pass any of the inspection pipes, the Contractor shall attempt to pass a 32.0-mm diameter rigid cylinder 1.375 m long through the complete length of those pipes in the presence of the Engineer. If an inspection pipe fails to pass the 32.0-mm diameter cylinder, the Contractor shall immediately fill all inspection pipes in the pile with water.

The Contractor shall replace each inspection pipe that does not pass the 32.0-mm diameter cylinder with a 50.8-mm diameter hole cored through the concrete for the entire length of the pile. Cored holes shall be located as close as possible to the inspection pipes they are replacing, no more than 150 mm inside the reinforcement, and coring shall not damage the pile reinforcement. Cored holes shall be made with a double wall core barrel system utilizing a split tube type inner barrel. Coring with a solid type inner barrel will not be allowed. Coring methods and equipment shall provide intact cores for the entire length of the pile concrete. The coring operation shall be logged by an Engineering Geologist or Civil Engineer licensed in the State of California and experienced in core logging. Coring logs shall include complete descriptions of inclusions and voids encountered during coring, and shall be delivered to the Engineer upon completion. Concrete cores shall be preserved, identified with the exact location the core was recovered from within the pile, and made available for inspection by the Engineer.

Acceptance tests of the concrete will be made by the Engineer, without cost to the Contractor. Acceptance tests will evaluate the homogeneity of the placed concrete. Tests will include gamma-gamma logging. Tests may also include crosshole sonic logging and other means of inspection selected by the Engineer. The Contractor shall not conduct operations within 8.0 m of the gamma-gamma logging operations. The Contractor shall separate reinforcing steel as necessary to allow the Engineer access to the inspection pipes to perform gamma-gamma logging or other acceptance testing. After requesting acceptance tests and providing access to the piling, the Contractor shall allow 15 working days for the Engineer to conduct these tests if the 48.3-mm diameter cylinder passed all inspection pipes, and 20 working days if only the 32.0-mm diameter cylinder passed all inspection pipes. Should the Engineer fail to complete these tests within the time allowance, and if in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in inspection, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All inspection pipes and cored holes in a pile shall be dewatered and filled with grout after notification by the Engineer that the pile is acceptable. Placement and removal of water in the inspection pipes shall be at the Contractors expense. Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The inspection pipes and holes shall be filled using grout tubes that extend to the bottom of the pipe or hole or into the grout already placed.

If acceptance testing performed by the Engineer determines that a pile does not meet the requirements of the specifications, then that pile will be rejected and all depositing of concrete under slurry or concrete placed using temporary casing for the purpose of controlling groundwater shall be suspended until written changes to the methods of pile construction are approved in writing by the Engineer.

The Contractor shall submit to the Engineer for approval a mitigation plan for repair, supplementation, or replacement for each rejected cast-in-drilled-hole concrete pile, and this plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Prior to submitting this mitigation plan, the Engineer will hold a repair feasibility meeting with the Contractor to discuss the feasibility of repairing rejected piling. The Engineer will consider the size of the defect, the location of the defect, and the design information and corrosion protection considerations for the pile. This information will be made available to the Contractor, if appropriate, for the development of the mitigation plan. If the Engineer determines that it is not feasible to repair the rejected pile, the Contractor shall not include repair as a means of mitigation and shall proceed with the submittal of a mitigation plan for replacement or supplementation of the rejected pile.

If the Engineer determines that a pile does not require mitigation due to structural, geotechnical, or corrosion concerns, the Contractor may elect to not repair anomalies found during acceptance testing of that pile. For the unrepaired pile, no payment will be made for the length of pile affected by the anomaly, as determined by the Engineer.

Pile mitigation plans shall include the following:

- A. The designation and location of the pile addressed by the mitigation plan.
- B. A review of the structural, geotechnical, and corrosion design requirements of the rejected pile.
- C. A step by step description of the mitigation work to be performed, including drawings if necessary.
- D. An assessment of how the proposed mitigation work will address the structural, geotechnical, and corrosion design requirements of the rejected pile.
- E. Methods for preservation or restoration of existing earthen materials.
- F. A list of affected facilities, if any, with methods and equipment for protection of these facilities during mitigation.
- G. The State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Kilometer Post, and the Contractor's (and Subcontractor's if applicable) name on each sheet.
- H. A list of materials, with quantity estimates, and personnel, with qualifications, to be used to perform the mitigation work.
- I. The seal and signature of an engineer who is licensed as a Civil Engineer by the State of California.

For rejected piles to be repaired, the Contractor shall submit a pile mitigation plan that contains the following additional information:

- A. An assessment of the nature and size of the anomalies in the rejected pile.
- B. Provisions for access for additional pile testing if required by the Engineer.

For rejected piles to be replaced or supplemented, the Contractor shall submit a pile mitigation plan that contains the following additional information:

- A. The proposed location and size of additional piling.
- B. Structural details and calculations for any modification to the structure to accommodate the replacement or supplemental piling.

All provisions for cast-in-drilled-hole concrete piling shall apply to replacement piling.

The Contractor shall allow the Engineer 15 working days to review the mitigation plan after a complete submittal has been received.

Should the Engineer fail to review the complete pile mitigation submittal within the time specified, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the pile mitigation plan, an extension of time commensurate with the delay in completion of the work thus caused will be granted in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

When repairs are performed, the Contractor shall submit a mitigation report to the Engineer within 10 days of completion of the repair. This report shall state exactly what repair work was performed and quantify the success of the repairs relative to the submitted mitigation plan. The mitigation report shall be stamped and signed by an engineer that is licensed as a Civil Engineer by the State of California. The mitigation report shall show the State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Kilometer Post, and the Contractor (and Subcontractor if applicable) name on each sheet. The Engineer will be the sole judge as to whether a mitigation proposal is acceptable, the mitigation efforts are successful, and to whether additional repairs, removal and replacement, or construction of a supplemental foundation is required.

#### **10-1.46 CONCRETE STRUCTURES**

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications.

#### **10-1.47 REINFORCEMENT**

Reinforcement shall conform to the provisions in Section 52, "Reinforcement," of the Standard Specifications and these special provisions.

The third paragraph of Section 52-1.04, "Inspection," of the Standard Specifications is amended to read:

- A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall also be furnished for each shipment of epoxy-coated bar reinforcement or wire reinforcement certifying that the coated reinforcement conforms to the requirements in ASTM Designation: A 775/A 775M or A 884/A 884M, respectively, and the provisions in Section 52-1.02B, "Epoxy-coated Reinforcement," of the Standard Specifications. The Certificate of Compliance shall include all of the certifications specified in ASTM Designation: A 775/A 775M or A 884/A 884M respectively, and a statement that the coating material has been prequalified by acceptance testing performed by the Valley Forge Laboratories, Inc., Devon, Pennsylvania.

The third paragraph of Section 52-1.08C, "Mechanical Butt Splices," of the Standard Specifications is amended to read:

- The total slip of the reinforcing bars within the splice sleeve after loading in tension to 200 MPa and relaxing to 20 MPa shall not exceed the values listed in the following table. The slip shall be measured between gage points that are clear of the splice sleeve.

| Reinforcing Bar Number | Total Slip (µm) |
|------------------------|-----------------|
| 13                     | 250             |
| 16                     | 250             |
| 19                     | 250             |
| 22                     | 350             |
| 25                     | 350             |
| 29                     | 350             |
| 32                     | 450             |
| 36                     | 450             |
| 43                     | 600             |
| 57                     | 750             |

The first paragraph of Section 52-1.08C(5), "Sleeve-Lockshear Bolt Mechanical Butt Splices," of the Standard Specifications is amended to read:

- The sleeve-lockshear bolt type of mechanical butt splices shall consist of a seamless steel sleeve, center hole with centering pin, and bolts that are tightened until the bolt heads shear off with the bolt ends left embedded in the reinforcing bars. The seamless steel sleeve shall be either formed into a V configuration or shall have 2 serrated steel strips welded to the inside of the sleeve.

Section 52-1.08F, "Nondestructive Splice Tests," of the Standard Specifications is amended by deleting the seventh paragraph.

## 10-1.48 SIGN STRUCTURES

Sign structures and foundations for overhead signs shall conform to the provisions in Section 56-1, "Overhead Sign Structures," of the Standard Specifications and these special provisions.

Before commencing fabrication of sign structures, the Contractor shall submit 2 sets of working drawings to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings." The working drawings shall include sign panel dimensions, span lengths, post heights, anchorage layouts, proposed splice locations, a snugging and tensioning pattern for anchor bolts and high strength bolted connections, and details for permanent steel anchor bolt templates. The working drawings shall be supplemented with a written quality control program that includes methods, equipment, and personnel necessary to satisfy the requirements specified herein and in the special provisions.

Working drawings shall be 559 mm x 864 mm or 279 mm x 432 mm in size and each drawing and calculation sheet shall include the State assigned designations for the contract number, sign structure type and reference as shown on the contract plans, District-County-Route-Kilometer Post, and contract number.

The Engineer shall have 20 working days to review the sign structure working drawings after a complete submittal has been received. No fabrication or installation of sign structures shall be performed until the working drawings are approved in writing by the Engineer.

Should the Engineer fail to complete the review within the time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the sign structure working

drawings, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays."

The third paragraph of Section 56-1.01, "Description," of the Standard Specifications shall not apply.

A permanent steel template shall be used to maintain the proper anchor bolt spacing.

One top nut, one leveling nut, and 2 washers shall be provided for the upper threaded portion of each anchor bolt.

Section 56-1.03, "Fabrication," of the Standard Specifications is amended by adding the following 2 paragraphs after the third paragraph:

- Surfaces of base plates which are to come in contact with concrete, grout, or washers and leveling nuts shall be flat to within 3 mm tolerance in 305 mm, and to within 5 mm tolerance overall. Faying surfaces of plates in high-strength bolted connections including flange surfaces of field splices, chord joints, and frame junctures, and contact surfaces of plates used for breakaway slip base assemblies shall be flat to within 2 mm tolerance in 305 mm, and within 3 mm tolerance overall.
- Thermally cut holes made in tubular members of sign supports, other than holes in base and flange plates, shall initially be made a minimum of 2 mm undersized, and then be mechanically enlarged by reaming or grinding to the final required size and shape. All edges shall have a surface roughness of not greater than 6.35  $\mu\text{m}$ . Round holes may be drilled to the exact final diameter. No holes shall be made in members unless the holes are shown on the plans or are approved in writing by the Engineer.

The sixth through the thirteenth paragraphs in Section 56-1.03, "Fabrication," of the Standard Specifications are amended to read:

- High-strength bolted connections, where shown on the plans, shall conform to the provisions in Section 55-3.14, "Bolted Connections," except that only fastener assemblies consisting of a high-strength bolt, nut, hardened washer, and direct tension indicator shall be used.
- High-strength fastener assemblies, and any other bolts, nuts, and washers attached to sign structures shall be zinc-coated by the mechanical deposition process.
- An alternating snugging and tensioning pattern for anchor bolts and high-strength bolted splices shall be used. Once tensioned, high-strength fastener components and direct tension indicators shall not be reused.
- For bolt diameters less than 10 mm, the diameter of the bolt hole shall be not more than 0.80-mm larger than the nominal bolt diameter. For bolt diameters greater than or equal to 10 mm, the diameter of the bolt hole shall be not more than 1.6 mm larger than the nominal bolt diameter.
- Sign structures shall be fabricated into the largest practical sections prior to galvanizing.
- Ribbed sheet metal panels for box beam closed truss sign structures shall be fastened to the truss members by cap screws or bolts as shown on the plans, or by 4.76 mm stainless steel blind rivets conforming to Industrial Fasteners Institute, Standard IFI-114, Grade 51. The outside diameter of the large flange rivet head shall be not less than 15.88 mm in diameter. Web splices in ribbed sheet metal panels may be made with similar type blind rivets of a size suitable for the thickness of material being connected.
- Spalling or chipping of concrete structures shall be repaired by the Contractor at the Contractor's expense.
- Overhead sign supports shall have an aluminum identification plate permanently attached near the base, adjacent to the traffic side on one of the vertical posts, using either stainless steel rivets or stainless steel screws. As a minimum, the information on the plate shall include the name of the manufacturer, the date of manufacture and the contract number.

Steel members used for overhead sign structures shall receive nondestructive testing (NDT) in conformance with AWS D1.1 and the following:

A.

| Weld Location   | Weld Type                         | Minimum Required NDT |
|---|-----------------------------------|----------------------|
| Welds for butt joint welds in tubular sections, nontubular sections, and posts  | CJP groove weld with backing ring | 100% UT or RT        |
| Longitudinal seam welds*  | PJP groove weld                   | 25% MT               |
|   | CJP groove weld                   | 100% UT or RT        |
| Welds for base plate, flange plate, or end cap to post or mast arm  | CJP groove weld                   | 25% UT or RT         |
|   | Fillet weld                       | 25% MT               |
| * Longitudinal seam welds shall have 60% minimum penetration, except that within 150 mm of any circumferential weld, longitudinal seam welds shall be CJP groove welds. |                                   |                      |

- B. A written procedure approved by the engineer shall be used when performing UT on material less than 8 mm thick. Contoured shoes shall be used when performing UT on round tubular sections under 1270 mm in diameter.
- C. When less than 100 percent of a weld is specified for NDT, and if defects are found during this inspection, additional NDT shall be performed. This additional NDT shall be performed on 25 percent of the total weld for all similar welds, as determined by the Engineer, produced for sign structures in the project. If any portion of the additional weld inspected is found defective, 100 percent of all similar welds produced for sign structures in the project, as determined by the Engineer, shall be tested.

Circumferential welds and base plate to post welds may be repaired only one time without written permission from the Engineer.

Full compensation for furnishing anchor bolt templates and for testing of welds shall be considered as included in the contract price paid per kilogram for furnish sign structure and no additional compensation will be allowed therefor.

#### 10-1.49 ROADSIDE SIGNS

Roadside signs shall be installed at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-2, "Roadside Signs," of the Standard Specifications and these special provisions.

Wood posts shall be pressure treated after fabrication in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," of the Standard Specifications with creosote, creosote coal tar solution, creosote petroleum solution (50-50), pentachlorophenol in hydrocarbon solvent, copper naphthenate, ammoniacal copper arsenate, or ammoniacal copper zinc arsenate. In addition to the preservatives listed above, Southern yellow pine may also be pressure treated with chromated copper arsenate. When other than one of the creosote processes is used, blocks shall have a minimum retention of 6.4 kg/m<sup>3</sup>, and need not be incised.

#### 10-1.50 ALTERNATIVE PIPE

Alternative pipe culverts shall conform to the provisions in Section 62, "Alternative Culverts," of the Standard Specifications and these special provisions.

#### 10-1.51 PLASTIC PIPE

Plastic pipe shall conform to the provisions in Section 64, "Plastic Pipe," of the Standard Specifications.

#### 10-1.52 REINFORCED CONCRETE PIPE

Reinforced concrete pipe shall conform to the provisions in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications and these special provisions.

Where embankment will not be placed over the top of the pipe, a relative compaction of not less than 85 percent shall be required below the pipe spring line for pipe installed using Method 1 backfill in trench, as shown on Standard Plan A62D. Where the pipe is to be placed under the traveled way, a relative compaction of not less than 90 percent shall be required unless the minimum distance between the top of the pipe and the pavement surface is the greater of 1.2 m or one half of the outside diameter of the pipe.

Except as otherwise designated by classification on the plans or in the specifications, joints for culvert and drainage pipes shall conform to the plans or specifications for standard joints.

When reinforced concrete pipe is installed in conformance with the details shown on Revised Standard Plan A62DA, the fifth paragraph of Section 19-3.04, "Water Control and Foundation Treatment," of the Standard Specifications shall not apply.

When solid rock or other unyielding material is encountered at the planned elevation of the bottom of the bedding, the material below the bottom of the bedding shall be removed to a depth of 1/50 of the height of the embankment over the top of the culvert, but not less than 150 mm nor more than 300 mm. The resulting trench below the bottom of the bedding shall be backfilled with structure backfill material in conformance with the provisions in Section 19-3.06, "Structure Backfill," of the Standard Specifications.

The excavation and backfill below the planned elevation of the bottom of the bedding will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

The Outer Bedding shown on Revised Standard Plan A62DA shall not be compacted prior to placement of the pipe.

Portland cement for concrete backfill shall be Type III conforming to the provisions in Section 90-2.01, "Portland Cement," of the Standard Specifications. A Type C accelerating admixture conforming to the requirements in ASTM Designation: C 494 shall be added to the concrete mix for concrete backfill. The admixture shall be used at the rate recommended by the manufacturer of the admixture. The admixture shall not contain chlorides as Cl in excess of one percent by mass as determined by California Test 415.

Reinforced concrete pipe shall be either cast or spun. Cast reinforced concrete pipe shall be manufactured by placing the concrete into stationary, vertical, cylindrical metal forms. Spun reinforced concrete pipe shall be manufactured by introducing the concrete into a rotating, horizontal, cylindrical metal form.

#### **10-1.53 CORRUGATED METAL PIPE**

Corrugated steel pipe and corrugated steel pipe bituminous coated culverts shall conform to the provisions in Section 66, "Corrugated Metal Pipe," of the Standard Specifications and these special provisions.

Corrugated steel pipe shall be fabricated from zinc-coated steel sheet.

#### **10-1.54 MISCELLANEOUS FACILITIES**

Steel flared end sections shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications.

#### **10-1.55 MISCELLANEOUS CONCRETE CONSTRUCTION**

Curbs, curb ramps, sidewalks, concrete islands and gutter depressions shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these special provisions.

Curb ramp detectable warning surface shall conform to the details shown on the plans and shall not be constructed or installed on curb ramps with a slope that exceeds 6.67 percent. The finished surfaces of the detectable warning surface shall be free from blemishes.

Curb ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps. Detectable warning surface, at the option of the Contractor, shall be either cast-in-place or stamped into the surface of the curb ramp, or shall be a prefabricated surface installed on the curb ramp. The color of the detectable warning surface shall be yellow conforming to Federal Standard No. 595B, Color No. 33538. Detectable warning surface, either cast-in-place or stamped into the surface of the curb ramp, shall be painted yellow in conformance with the provisions in Section 59-6, "Painting Concrete," of the Standard Specifications.

Prior to constructing curb ramps with a cast-in-place or stamped detectable warning surface, a test panel shall be constructed on the project site and shall be of a size not less than 600 mm by 600 mm. The test panel shall be constructed, finished and cured with the same materials, tools, equipment, and methods to be used in constructing the proposed permanent work. Additional test panels shall be constructed as necessary until a panel is produced which demonstrates, to the satisfaction of the Engineer, the ability of the selected procedure to produce a detectable warning surface that meets all of the specified requirements.

Full compensation for constructing or installing a curb ramp detectable warning surface shall be considered as included in the contract price paid per cubic meter for minor concrete (miscellaneous construction) and no separate payment will be made therefor.

#### **10-1.56 MISCELLANEOUS IRON AND STEEL**

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications.



### **10-1.57 CHAIN LINK FENCE**

Chain link fence shall be Type CL-1.8 and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

### **10-1.58 MARKERS AND DELINEATORS**

Markers and delineators shall conform to the provisions in Section 82, "Markers and Delineators," of the Standard Specifications and these special provisions.

Markers and delineators on flexible posts shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone, and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

Retroreflective sheeting for metal and flexible target plates shall be the retroreflective sheeting designated for channelizers, markers, and delineators conforming to the requirements in ASTM Designation: D 4956-95 and in conformance with the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

### **10-1.59 METAL BEAM GUARD RAILING**

Metal beam guard railing shall be constructed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.

Attention is directed to "Order of Work" of these special provisions.

Line posts, where shown on the plans, shall be steel. Non-steel line posts and blocks shall be wood.

Delete the ninth and eleventh paragraphs in Section 83-1.02B, "Metal Beam Guard Railing," of the Standard Specifications.

The grades and species of wood posts and blocks shall be No. 1 timbers (also known as No. 1 structural) Douglas fir or No. 1 timbers Southern yellow pine. Wood posts and blocks shall be graded in conformance with the provisions in Section 57-2, "Structural Timber," of the Standard Specifications, except allowances for shrinkage after mill cutting shall in no case exceed 5 percent of the American Lumber Standards minimum sizes, at the time of installation.

Wood posts and blocks shall be pressure treated after fabrication in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," of the Standard Specifications with creosote, creosote coal tar solution, creosote petroleum solution (50-50), pentachlorophenol in hydrocarbon solvent, copper naphthenate, ammoniacal copper arsenate, or ammoniacal copper zinc arsenate. In addition to the preservatives listed above, Southern yellow pine may also be pressure treated with chromated copper arsenate. When other than one of the creosote processes is used, blocks shall have a minimum retention of 6.4 Kg/m<sup>3</sup>, and need not be incised.

### **TERMINAL SYSTEM (TYPE SRT)**

Terminal system (Type SRT) shall be furnished and installed as shown on the plans and in conformance with these special provisions.

Terminal system (Type SRT) shall be a SRT-350 Slotted Rail Terminal (8 post system) as manufactured by Trinity Industries, Inc., and shall include all the items detailed for terminal system (Type SRT) shown on the plans.

The 5 mm x 44 mm x 75 mm plate washer shown on the elevation view and in Section D-D at Wood Post No. 1 shall be omitted.

Arrangements have been made to insure that any successful bidder can obtain the SRT-350 Slotted Rail Terminal (8 post system) from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone 1-800-772-7976. The price quoted by the manufacturer for the SRT-350 Slotted Rail Terminal (8 post system), FOB Centerville, Utah is \$865, not including sales tax.

The above price will be firm for orders placed on or before July 31, 2001, provided delivery is accepted within 90 days after the order is placed.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that terminal systems (Type SRT) conform to the contract plans and specifications, conform to the prequalified design and material requirements and were manufactured in conformance with the approved quality control program.

The terminal system (Type SRT) shall be installed in conformance with the manufacturer's installation instructions and these requirements. The steel foundation tubes with soil plates attached, shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. Wood terminal posts shall be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system (Type SRT) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

#### 10-1.60 CONCRETE BARRIER

Concrete barriers shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

The provisions of the third paragraph in Section 83-2.02D(4), "Finishing," of the Standard Specifications shall not apply.

Concrete barrier markers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. At those locations shown on the plans, concrete barrier markers shall be cemented to the barrier in conformance with the manufacturer's recommendations.

#### 10-1.61 CONCRETE BARRIER (TYPE K)

Concrete barrier (Type K) shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

Concrete barrier (Type K) shall consist of precast units conforming to the provisions for temporary railing (Type K) in Section 12-3.08, "Temporary Railing (Type K)," of the Standard Specifications, except that removable panels shall not be used and the concrete barrier (Type K) shall remain in place at the completion of the contract.

Temporary railing (Type K) reflectors on concrete barrier (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Full compensation for furnishing and installing temporary railing (Type K) reflectors on concrete barrier (Type K) shall be considered as included in the contract price paid per meter for concrete barrier (Type K) and no additional compensation will be allowed therefor.

#### 10-1.62 CRASH CUSHION (REACT)

Crash cushion (REACT) shall be furnished and installed as shown on the plans and in conformance with the provisions in the Standard Specifications and these special provisions.

Crash cushion (REACT) shall be a multiple recoverable type, manufactured by Roadway Safety Service, Inc. Crash cushion (REACT) and additional components shall conform to the descriptions as follows:

| Contract Item Description  | Manufacturer's Product Description |
|----------------------------|------------------------------------|
| Crash Cushion (REACT 9CBB) | REACT 350.9 Concrete Side Mount    |

The successful bidder can obtain the crash cushion from the following source:

A. Manufacturer: Roadway Safety Service, Inc., One East Wacker Drive, Suite 3000, Chicago, Illinois 60601.

B. Distributors:

1. Southern California: Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, California 92805, Telephone 1-800-222-8274, FAX 1-714-937-1070.
2. Northern California: Traffic Control Services, Inc., 8585 Thys Court, Sacramento, California 95828, Telephone 1-800-884-8274, FAX 1-916-387-9734.

The price quoted by the manufacturer for Crash Cushion (REACT 9CBB), FOB Channelview, Texas is \$23,414, not including sales tax.

The above prices will be firm for orders placed on or before June 30, 2001, provided delivery is accepted within 90 days after the order is placed.

The prices quoted do not include the concrete backup block, concrete anchor slab or the W-Beam connection to barrier.

Crash cushion shall be installed in conformance with the manufacturer's recommendations.

Concrete anchorage devices used for attaching the crash cushion to the base slab shall be limited to those which have been proven satisfactory for such application by previous testing.

The concrete anchor slab and backup block shall conform to the provisions in Section 51, "Concrete Structures," and Section 52, "Reinforcement," of the Standard Specifications and these special provisions.

The concrete anchor slab and backup block shall be constructed of concrete containing not less than 350 kg of cement per cubic meter.

High strength bolts and nuts for W-Beam connections to barrier shall conform to the requirements in ASTM Designation: A 325 or A 325M and A 563 or A 563M, respectively.

The Contractor shall furnish the Engineer one copy of the manufacturer's plan and parts list for each model installed.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that crash cushion conforms with the contract plans and specifications, conforms to the prequalified design and material requirements, and was manufactured in conformance with the approved quality control program.

Crash cushion will be measured by the unit as determined from actual count in place in the completed work.

The contract unit prices paid for crash cushion (REACT 9CBB) shall include full compensation for furnishing all labor, materials (including anchor bolts, nuts, washers, and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing crash cushions, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.63 CRASH CUSHION, SAND FILLED**

Sand filled crash cushions shall be furnished and installed as shown on the plans and in conformance with these special provisions.

A sand filled crash cushion shall consist of a grouping of sand filled modules.

Crash cushions shall be installed at the following locations:

AA 13+82 right.

AR 16+30 right.

At the Contractor's option, modules for use in sand filled crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or TraFFix Sand Barrels manufactured after March 31, 1997, or equal:

A. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601-2076. Telephone 1-312-467-6750, FAX 1-800-770-6755.

1. Distributor (North): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828. Telephone 1-800-884-8274, FAX 1-916-387-9734.
2. Distributor (South): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805. Telephone 1-800-222-8274, FAX 1-714-937-1070.

B. TraFFix Sand Barrels, manufactured by TraFFix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672. Telephone 1-949 361-5663, FAX 1-949 361-9205.

1. Distributor (North): United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112. Telephone 1-408 287-4303, FAX 1-408 287-1929.
2. Distributor (North): Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448. Telephone 1-800-559-7080, FAX 1-805 929-5786.

Modules contained in the crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color as furnished by the vendor, with black lids. The exterior components of the modules shall be formulated or processed to resist deterioration from ambient ultraviolet rays. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the crash cushions comply with the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water, as determined by California Test 226.

Modules placed on bridge decks shall be provided with positioning blocks fastened to the deck surface. Positioning blocks shall be shaped as segments of a ring and placed along the inner or outer periphery of the module wall. A minimum of 2 blocks, a minimum of one-sixth of a ring in length shall be provided for each module. Positioning blocks and fasteners shall be of a material that is corrosion and water resistant.

Module cylinders shall be filled with sand in conformance with the manufacturer's directions and to the sand capacity in kilograms for each module shown on the plans.

Lids shall be securely attached as recommended by the manufacturer.

A Type R or Type P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods approved by the Engineer.

Sand filled crash cushions, regardless of the number of modules required in each sand filled crash cushion, will be measured and paid for by the unit as crash cushion, sand filled. The quantity to be paid for will be determined from actual count of the units in place in the completed work.

The contract unit price paid for crash cushion, sand filled shall include full compensation for furnishing all labor, materials (including sand and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing crash cushions, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.64 THERMOPLASTIC TRAFFIC STRIPE AND PAVEMENT MARKING**

Thermoplastic traffic stripes (traffic lines) and pavement markings shall be applied in conformance with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Where striping joins existing striping, as shown on the plans, the Contractor shall begin and end the transition from the existing striping pattern into or from the new striping pattern a sufficient distance to ensure continuity of the striping pattern.

Thermoplastic material for traffic stripes shall be applied at a minimum thickness of 2.0 mm.

At the option of the Contractor, permanent traffic striping and pavement marking tape conforming to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions may be placed instead of the thermoplastic traffic stripes and pavement markings specified herein. Permanent tape, if used, shall be installed in conformance with the manufacturer's specifications. If permanent tape is placed instead of thermoplastic traffic stripes and pavement markings, the tape will be measured and paid for by the meter as thermoplastic traffic stripe and by the square meter as thermoplastic pavement marking.

#### **10-1.65 PAVEMENT MARKERS**

Pavement markers shall be placed in conformance with the provisions in Section 85, "Pavement Markers," of the Standard Specifications and these special provisions.

Attention is directed to "Traffic Control System For Lane Closure" of these special provisions regarding the use of moving lane closures during placement of pavement markers with bituminous adhesive.

### **SECTION 10-2. HIGHWAY PLANTING AND IRRIGATION SYSTEMS**

#### **10-2.01 GENERAL**

The work performed in connection with highway planting and irrigation systems shall conform to the provisions in Section 20, "Erosion Control and Highway Planting," of the Standard Specifications and these special provisions.

The Contractor shall notify the Engineer not less than 72 hours prior to requiring initial access to the existing irrigation controllers. When the Engineer determines that access to the controllers is required at other times, arrangements will be made to provide this access.

#### **COST BREAK-DOWN**

The Contractor shall furnish the Engineer a cost break-down for the contract lump sum item of irrigation system.

The cost break-down shall be completed and furnished in the format shown in the sample of the cost break-down included in this section. Unit descriptions of work shown in the samples are the minimum to be submitted. Additional unit descriptions of work may be designated by the Contractor. If the Contractor elects to designate additional unit descriptions of work, the quantity, value and amount for those units shall be completed in the same manner as for the unit descriptions shown in the samples. The units and quantities given in the sample are to show the manner of preparing the cost break-down to be furnished by the Contractor.

The Contractor shall determine the quantities required to complete the work shown on the plans. The quantities and their values shall be included in the cost break-down submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-down submitted for approval.

No adjustment in compensation will be made in the contract lump sum price paid for irrigation system due to differences between the quantities shown in the cost break-down furnished by the Contractor and the quantities required to complete the work as shown on the plans and as specified in these special provisions.

The sum of the amounts for the units of work listed in the cost break-down for irrigation system work shall be equal to the contract lump sum price bid for the work. Profit shall be included in each individual unit listed in the cost break-down. Cost break-downs shall be submitted to the Engineer for approval within 15 working days after the contract has been approved. Cost break-downs shall be approved, in writing, by the Engineer before partial payment for the item of irrigation system will be made.

Approved cost break-downs will be used to determine partial payments during the progress of the work and as the basis for calculating the adjustment in compensation for the item of irrigation system due to changes ordered by the Engineer. When an ordered change increases or decreases the quantities of an approved cost break-down, the adjustment in compensation will be determined in the same manner specified for increases and decreases in the quantity of a contract item of work in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.

## IRRIGATION SYSTEM COST BREAK-DOWN

Contract No. 04-0T0504

| UNIT DESCRIPTION   | UNIT | APPROXIMATE QUANTITY | VALUE | AMOUNT |
|--|------|----------------------|-------|--------|
| CHECK AND TEST, REMOVE, RELOCATE AND MAINTAIN EXISTING IRRIGATION FACILITIES | LS   | LUMP SUM             |       |        |
| 40 MM PLASTIC PIPE (SUPPLY LINE) (PR200)                                     | M    | 970                  |       |        |
| 50 MM PLASTIC PIPE (SUPPLY LINE) (PR200)                                     | M    | 2125                 |       |        |
| 65 MM PLASTIC PIPE (SUPPLY LINE) (PR200)                                     | M    | 60                   |       |        |
| CONTROL AND NEUTRAL CONDUCTORS   | LS   | LUMP SUM             |       |        |
| REMOVE EXISTING PLANTS FOR TRENCHING   | LS   | LUMP SUM             |       |        |

**TOTAL** \_\_\_\_\_

### 10-2.02 EXISTING HIGHWAY PLANTING

In addition to the provisions in Section 20 of the Standard Specifications, work performed in connection with existing highway planting shall be in conformance with the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Replacement planting shall conform to the requirements specified under "Preservation of Property" of these special provisions.

#### MAINTAIN EXISTING PLANTS

Existing plants shall be maintained as directed by the Engineer. Maintaining existing plants will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

#### REMOVE EXISTING PLANTS FOR TRENCHING

Removing existing plants for trenching shall conform to the provisions in Section 20-5.026, "Remove Existing Plants for Trenching," of the Standard Specifications and these special provisions.

Removing existing plants for trenching work shall consist of removing and replacing ground cover, pruning trees and shrubs within trench locations, and disposing of removed ground cover and prunings.

Replacement of removed ground cover within the maximum 1.8-m width, as specified in Section 20-5.026, "Remove Existing Plants for Trenching," of the Standard Specifications, will not be required.

Trees and shrubs adjacent to dikes, walks, fences, guard railing, and pavement edges may be pruned back 3 m from these facilities to facilitate trenching work. When trenching is to be performed adjacent to other trees and shrubs that cannot be avoided, the trees and shrubs may be pruned upon receipt of prior written approval of the Engineer.

Pruning shall include removal of deadwood, suckers, and broken or bruised branches 25 mm or larger in diameter. Pruning shall conform to the provisions in Section 20-4.055, "Pruning," of the Standard Specifications.

Removed ground cover and pruned materials shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. At the Contractor's option, removed ground cover and prunings may be reduced to chips. Chipped materials shall be spread within the highway right of way where designated by the Engineer.

Shrubs adjacent to dikes, fences, guard railing, and the edge of pavement within the 3-m pruned area designated above, that in the opinion of the Engineer should be removed after pruning, shall be removed and disposed of. Removing and disposing of the shrubs not otherwise provided for will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

## **PRUNE EXISTING PLANTS**

Existing plants, as determined by the Engineer, shall be pruned. Pruning of the existing plants, except as otherwise provided in these special provisions, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

## **10-2.03 EXISTING HIGHWAY IRRIGATION FACILITIES**

The work performed in connection with the various existing highway irrigation system facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Water shall be maintained in conformance with the provisions in Section 20-5.025, "Maintain Existing Water Supply," of the Standard Specifications.

## **CHECK AND TEST EXISTING IRRIGATION FACILITIES**

Existing irrigation facilities that are to remain or to be relocated, and that are within those areas where clearing and grubbing or earthwork operations are to be performed, shall be checked for missing or damaged components and proper operation prior to performing clearing and grubbing or earthwork operations. Existing irrigation facilities outside of work areas that are affected by the construction work shall also be checked for proper operation.

A written list of existing irrigation system deficiencies shall be submitted to the Engineer within 5 working days after checking the existing facilities.

Deficiencies found during checking of the existing facilities shall be corrected as directed by the Engineer. Corrective work ordered by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

When existing irrigation facilities are checked, existing backflow preventers to remain shall be tested for proper operation in conformance with the provisions in Section 20-5.03J, "Check and Test Backflow Preventers," of the Standard Specifications.

Existing backflow preventers shall be retested one year after the satisfactory completion of the previous test.

Length of watering cycles for use of potable water from water meters for checking or testing existing irrigation facilities shall be as determined by the Engineer.

Repairs to the existing irrigation facilities ordered by the Engineer after checking and testing the facilities, and further repairs required thereafter as ordered by the Engineer, except as otherwise provided for under "Maintain Existing Irrigation Facilities" of these special provisions, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

## **MAINTAIN EXISTING IRRIGATION FACILITIES**

Existing irrigation facilities shall be maintained throughout the life of the contract. Prior to the start of maintaining existing irrigation facilities work, the facilities shall be checked for proper operation, and repaired in conformance with the provisions in "Check and Test Existing Irrigation Facilities" of these special provisions.

After the existing facilities have been checked and repaired, the Contractor shall be responsible for the routine maintenance of existing irrigation systems. The work shall include, but not limited to, checking irrigation systems for proper operation and adjusting, repairing or replacing valves, valve boxes, sprinklers, risers, swing joints, wye strainers, and filter assembly units.

The Contractor will not be responsible for maintaining existing water meters, underground pipe supply lines, control and neutral conductors, and electrical conduits. Except as otherwise specified in section "Existing Highway Irrigation Facilities" of these special provisions, repair work to these facilities ordered by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Existing automatic irrigation systems shall be operated automatically during the life of the contract, except manual operation will be allowed for the work during plant replacement, and the repair of irrigation facilities.

Irrigation controllers shall be programmed by the Contractor for seasonal water requirements. During winter seasons irrigation systems shall be operated automatically a minimum of 2 minutes every 2 weeks.

Irrigation systems and facilities shall be checked for proper operation at least once every 30 days. When required, as determined by the Engineer, adjusting, repairing or replacing irrigation facilities shall be completed within 5 working days after checking the irrigation systems. Except as provided in these special provisions, repair and replacement of irrigation facilities shall conform to the provisions in "Existing Highway Irrigation Facilities" of these special provisions.

Except as provided in these special provisions, full compensation for maintaining existing irrigation facilities, including checking irrigation facilities, shall be considered as included in the contract lump sum price paid for irrigation system and no separate payment will be made therefor.

## **REMOVE EXISTING IRRIGATION FACILITIES**

Existing irrigation facilities where shown on the plans to be removed, shall be removed. Facilities that are more than 150 mm below finished grade, excluding facilities to be salvaged, may be abandoned in place.

Immediately after disconnecting an existing irrigation facility to be removed or abandoned from an existing facility to remain, the remaining facility shall be capped or plugged, or shall be connected to a new or existing irrigation facility.

Facilities to be removed, shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

## **RELOCATE EXISTING IRRIGATION FACILITIES**

Relocate existing irrigation facilities shall consist of relocating existing electric remote control valves, sprinklers, pull boxes, wye strainers and other facilities shown on the plans or specified in these special provisions.

Relocate existing valves shall consist of relocating existing valves, valve boxes and valve box covers. Relocated valve boxes shall be installed with new woven wire cloth and crushed rock bedding as shown on the plans.

Relocate existing sprinklers shall consist of relocating existing sprinklers, risers, riser supports, check valves, and concrete protectors as shown on the plans.

Relocate pull boxes shall consist of relocating existing pull boxes and pull box covers. Relocated pull boxes shall be installed on new woven wire cloth and crushed rock bedding as shown on the plans for valve box installations.

Existing irrigation facilities, shown on the plans to be relocated, that are, in the opinion of the Engineer, unsuitable for the purpose intended, shall be replaced in conformance with the provisions in Section 15-2.05, "Reconstruction," of the Standard Specifications.

After irrigation facilities have been relocated, the Contractor shall demonstrate that the relocated facilities function properly in the presence of the Engineer.

### **10-2.04 (BLANK)**

### **10-2.05 IRRIGATION SYSTEMS**

Irrigation systems shall be furnished and installed in conformance with the provisions in Section 20-5, "Irrigation Systems," of the Standard Specifications, except materials containing asbestos fibers shall not be used.

Attention is directed to the provisions in "Obstructions" of these special provisions, regarding work over or adjacent to existing underground facilities. Excavation for proposed irrigation facilities shall not be started until the existing underground facilities have been located.

Pipe supply lines shall be pressure tested in conformance with the provisions in Section 20-5.03H, "Pressure Testing," of the Standard Specifications, except the pipe (supply line) on the discharge side of the control valve shall be tested by Method B as specified in Section 20-5.03H(2), "Method B," of the Standard Specifications.

Only pipeline trenches and excavation pits for supply lines being supplied from one water service point shall be open at one time. After pressure testing is complete, trenches and pits excavated for pipe supply lines, being supplied from one water service point, shall be backfilled prior to commencing excavations for pipe supply lines being supplied from another water service point.

## **ELECTRIC AUTOMATIC IRRIGATION COMPONENTS**

### **Pull Boxes**

Pull box installations shall conform to the provisions in Section 20-5.027I, "Conductors, Electrical Conduits and Pull Boxes," of the Standard Specifications.

### **Conductors**

Low voltage, as used in this section "Conductors," shall mean 36 V or less.

Low voltage control and neutral conductors in pull boxes and valve boxes, at irrigation controller terminals, and at splices shall be marked as follows:

- A. Conductor terminations and splices shall be marked with adhesive backed paper markers or adhesive cloth wrap-around markers, with clear, heat-shrinkable sleeves sealed over the markers.
- B. Non-spliced conductors in pull boxes and valve boxes shall be marked with clip-on, "C" shaped, white extruded polyvinyl chloride sleeves. Marker sleeves shall have black, indented legends of uniform depth with transparent overlays over the legends and "chevron" cuts for alignment of 2 or more sleeves.



Markers for the control conductors shall be identified with the appropriate number or letter designations of irrigation controllers and station numbers. Markers for neutral conductors shall be identified with the appropriate number or letter designations of the irrigation controllers.

New control and neutral conductors that are to replace existing control and neutral conductors shall be the same size and color as the existing control and neutral conductors being connected to.

The color of low voltage neutral and control conductor insulation, except for the striped portions, shall be homogeneous throughout the entire thickness of the insulation.

Insulation for conductors may be UL listed polyethylene conforming to UL44 test standards with a minimum insulation thickness of 1.05 mm for wire sizes 10AWG and smaller.

### **ARMOR-CLAD CONDUCTORS**

Armor-clad conductors shall be used in direct burial applications from pull boxes adjacent to irrigation controller enclosure cabinets to the remote control valves and other irrigation facilities in conformance with the details shown on the plans and these special provisions.

Armor-clad conductors shall conform to the following:

- A. Conductors shall be the proper size for the application, and shall be solid, uncoated copper with a conductor size of not less than 90 percent of the AWG diameter required.
- B. Conductor insulation coverings shall be manufactured of polyvinyl chloride (PVC) conforming to UL style, Type UF 60°C, 600 V. Average thickness of insulation shall be not less than 1.52 mm with a minimum thickness of 1.37 mm at any one point.
- C. Armor shall be a minimum of 0.13-mm thick by 12.7 mm wide, Type 304 stainless steel tape that is helically wrapped over each conductor with a 33 percent minimum overlap.
- D. Outer jacket for conductors shall be sunlight resistant PVC and shall conform to the Insulated Power Cable Engineer's Association (ICEA) S-61-402, NEMA Standard WC5, and UL Listing 1263. Nominal thickness of the outer jacket shall be 0.76-mm with a minimum thickness of 0.61 mm at any one point.

At the option of the Contractor, nonarmor-clad conductors conforming to the provisions in Section 20-2.31D, "Conductors," of the Standard Specifications may be used in lieu of armor-clad conductors when the conductors are installed in an electrical conduit in irrigation crossovers.

### **IRRIGATION SYSTEMS FUNCTIONAL TEST**

Functional tests for the existing irrigation controllers and associated automatic irrigation systems shall conform to the provisions in Section 20-5.027J, "Testing," of the Standard Specifications and these special provisions.

Tests shall demonstrate to the Engineer, through one complete cycle of the existing irrigation controllers in the automatic mode, that the associated automatic components of the irrigation systems operate properly. If automatic components of the irrigation systems fail a functional test, these components shall be repaired at the Contractor's expense and the testing repeated until satisfactory operation is obtained.

Associated automatic components shall include, but not be limited to remote control valves.

Upon completion of work on an irrigation system, including correction of deficiencies and satisfactory functional tests for the systems involved, work involved in placing concrete pavers may begin provided the areas have been prepared as specified in these special provisions.

### **PIPE**

#### **Plastic Pipe**

Plastic pipe supply lines shall be polyvinyl chloride (PVC) 1120 or 1220 pressure rated pipe with the minimum pressure rating (PR) of 200.

Plastic pipe supply lines less than 100 mm in diameter shall have solvent cemented type joints. Primers shall be used on the solvent cemented type joints.

Plastic pipe supply lines downstream from the remote control valves for Type C sprinklers shall have a minimum cover of 150 mm.

A nonhardening joint compound shall be used in place of the pipe thread sealant tape conforming to the provisions in Section 20-5.03E, "Pipe," of the Standard Specifications. Joint compounds shall be applied in conformance with the manufacturer's recommendations.

Fittings for plastic pipe supply lines with a pressure rating (PR) of 315 shall be Schedule 80.

## **FINAL IRRIGATION SYSTEM CHECK**

A final check of existing and new irrigation facilities shall be performed not more than 20 working days prior to acceptance of the contract.

The length of watering cycles using potable water measured by water meters for the final check of irrigation facilities will be determined by the Engineer.

Remote control valves connected to existing and new irrigation controllers shall be checked for automatic performance when the controllers are in automatic mode.

Unsatisfactory performance of irrigation facilities installed or modified by the Contractor shall be repaired and rechecked at the Contractor's expense until satisfactory performance is obtained, as determined by the Engineer.

Repair or replacement of existing irrigation facilities due to unsatisfactory performance shall conform to the provisions in "Existing Highway Irrigation Facilities" of these special provisions.

Nothing in this section "Final Irrigation System Check" shall relieve the Contractor of full responsibility for making good or repairing defective work or materials found before the formal written acceptance of the entire contract by the Director.

Full compensation for checking the irrigation systems prior to the acceptance of the contract shall be considered as included in the contract lump sum price paid for irrigation system and no additional compensation will be allowed therefor.

## **SECTION 10-3. LIGHTING AND ELECTRICAL SYSTEMS**

### **10-3.01 DESCRIPTION**

Lighting, sign illumination, electric service (irrigation) and traffic monitoring stations shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

Locations of traffic monitoring installations are shown on the lighting and sign illumination plans.

### **10-3.02 COST BREAK-DOWN**

Cost break-downs shall conform to the provisions in Section 86-1.03, "Cost Break-Down," of the Standard Specifications and these special provisions.

The Engineer shall be furnished a cost break-down for each contract lump sum item of work described in this Section 10-3.

The cost break-down shall be submitted to the Engineer for approval within 30 days after the contract has been approved. The cost break-down shall be approved, in writing, by the Engineer before any partial payment for the items of electrical work will be made.

### **10-3.03 CONDUIT**

Conduit to be installed underground shall be Type 1 or Type 3 unless otherwise specified. The conduit in a foundation and between a foundation and the nearest pull box shall be Type 1.

Conduit sizes shown on the plans and specified in the Standard Specifications and these special provisions are referenced to metallic type conduit. When rigid non-metallic conduit is required or allowed, the nominal equivalent industry size shall be used as shown in the following table:

| Size Designation for Metallic Type Conduit | Equivalent Size for Rigid Non-metallic Conduit |
|--|--|
| 21   | 20   |
| 27   | 25   |
| 41   | 40   |
| 53   | 50   |
| 63   | 65   |
| 78   | 75   |
| 103  | 100  |

When a standard coupling cannot be used for joining Type 1 conduit, a UL listed threaded union coupling conforming to the provisions in Section 86-2.05C, "Installation," of the Standard Specifications, or a concrete-tight split coupling, or concrete-tight set screw coupling shall be used.

When Type 3 conduit is placed in a trench (not in pavement or under portland cement concrete sidewalk), after the bedding material is placed and the conduit is installed, the trench shall be backfilled with commercial quality concrete, containing not less than 250 kg of portland cement per cubic meter, to not less than 100 mm above the conduit before additional backfill material is placed.

After conductors have been installed, the ends of conduits terminating in pull boxes and service equipment enclosures shall be sealed with an approved type of sealing compound.

At locations where conduit is required to be installed under pavement and if a delay to vehicles will not exceed 5 minutes, conduit may be installed by the "Trenching in Pavement Method."

At the option of the Contractor, the final 0.6-m of conduit entering a pull box in a reinforced concrete structure may be Type 4.

#### **10-3.04 PULL BOXES**

Grout shall not be placed in the bottom of new or existing pull boxes.

#### **10-3.05 CONDUCTORS AND WIRING**

Splices shall be insulated by "Method B".

The minimum insulation thickness, at any point, for Type USE, RHH or RHW wire shall be 1.0 mm for conductor sizes No. 14 to No. 10, inclusive, and 1.3 mm for No. 8 to No. 2, inclusive. The minimum insulation thickness, at any point, for Type THW and TW wires shall be 0.69 mm for conductor sizes No. 14 to No. 10, inclusive, 1.02 mm for No. 8, and 1.37 mm for No. 6 to No. 2, inclusive.

#### **10-3.06 SERVICE**

Type III service equipment enclosures shall be the aluminum type.

Circuit breakers shall be the cable-in/cable-out type, mounted on non-energized clips. All circuit breakers shall be mounted vertically with the up position of the handle being the "ON" position.

Each service shall be provided with up to 2 main circuit breakers which shall disconnect ungrounded service entrance conductors. Where the "Main" circuit breaker consists of 2 circuit breakers as shown on the plans or required in the special provisions, each of the circuit breakers shall have a minimum interrupting capacity of 10 000 A, rms.

Type H service shall consist of a conduit and conductors with length and size as required by the serving utility company.

The neutral conductor shall run from the service equipment enclosure to the controller cabinet without splicing to any other neutral conductor.

The bottom of the lowest circuit breaker shall be 600 mm minimum above the bottom of the service equipment enclosure.

#### **10-3.07 SIGN DISCONNECTS**

Sign disconnects shall be fused switches.

#### **10-3.08 NUMBERING ELECTRICAL EQUIPMENT**

The placement of numbers on electrical equipment will be done by others.

#### **10-3.09 DETECTORS**

Loop wire shall be Type 1.

Loop detector lead-in cable shall be Type B.

#### **10-3.10 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT**

Salvaged electrical materials shall be hauled to Caltrans Electrical Maintenance Station, 30 Rickard Street, San Francisco, CA 94134, (415) 330-6509 and stockpiled.

The Contractor shall provide the equipment, as necessary, to safely unload and stockpile the material. A minimum of 2 working days' notice shall be given prior to delivery.

#### **10-3.11 PAYMENT**

Full compensation for hauling and stockpiling electrical materials shall be considered as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefor.

Full compensation for traffic monitoring stations and electrical service (irrigation) shall be considered as included in the contract lump sum price paid for lighting and sign illumination and no separate payment will be made therefor.

### **SECTION 11. MODIFIED STANDARD SPECIFICATION SECTIONS**

#### **SECTION 11-1. (BLANK)**

#### **SECTION 11-2. PORTLAND CEMENT CONCRETE**

### 11-2.01 GENERAL

Portland cement concrete shall conform to the provisions in this Section 11-2, "Portland Cement Concrete," and the section entitled "Portland Cement Concrete" in Section 8, "Materials," of these special provisions. Section 90, "Portland Cement Concrete," of the Standard Specifications is deleted. Section 90, "Portland Cement Concrete," of the Standard Specifications is amended to read as follows.

## SECTION 90: PORTLAND CEMENT CONCRETE

### 90-1 GENERAL

#### 90-1.01 DESCRIPTION

- Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.
- The Contractor shall determine the mix proportions for all concrete except pavement concrete. The Engineer will determine the mix proportions for pavement concrete. Concrete for which the mix proportions are determined either by the Contractor or the Engineer shall conform to the requirements of this Section 90.
- Unless otherwise specified, cementitious material shall be a combination of cement and mineral admixture. Cementitious material shall be either:
  1. "Type IP (MS) Modified" cement; or
  2. A combination of "Type II Modified" portland cement and mineral admixture; or
  3. A combination of Type V portland cement and mineral admixture.
- Type III portland cement shall be used only as allowed in the special provisions or with the approval of the Engineer.
- Class 1 concrete shall contain not less than 400 kg of cementitious material per cubic meter.
- Class 2 concrete shall contain not less than 350 kg of cementitious material per cubic meter.
- Class 3 concrete shall contain not less than 300 kg of cementitious material per cubic meter.
- Class 4 concrete shall contain not less than 250 kg of cementitious material per cubic meter.
- Minor concrete shall contain not less than 325 kg of cementitious material per cubic meter unless otherwise specified in these specifications or the special provisions.
- Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic meter of concrete in structures or portions of structures shall conform to the following:

| Use  | Cementitious Material Content<br>(kg/m <sup>3</sup> ) |
|--|---|
| Concrete designated by compressive strength:     |   |
| Deck slabs and slab spans of bridges             | 400 min., 475 max.                                    |
| Roof sections of exposed top box culverts        | 400 min., 475 max.                                    |
| Other portions of structures                     | 350 min., 475 max.                                    |
| Concrete not designated by compressive strength: |   |
| Deck slabs and slab spans of bridges             | 400 min.  |
| Roof sections of exposed top box culverts        | 400 min.  |
| Prestressed members                              | 400 min.  |
| Seal courses                                     | 400 min.  |
| Other portions of structures                     | 350 min.  |
| Concrete for precast members                     | 350 min., 550 max.                                    |

- Whenever the 28-day compressive strength shown on the plans is greater than 25 MPa, the concrete shall be designated by compressive strength. If the plans show a 28-day compressive strength that is 28 MPa or greater, an additional 14 days will be allowed to obtain the specified strength. The 28-day compressive strengths shown on the plans that are 25 MPa or less are shown for design information only and are not a requirement for acceptance of the concrete.
- Concrete designated by compressive strength shall be proportioned such that the concrete will attain the strength shown on the plans or specified in the special provisions.
- Before using concrete for which the mix proportions have been determined by the Contractor, or in advance of revising those mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

- Compliance with cementitious material content requirements will be verified in conformance with procedures described in California Test 518 for cement content. For testing purposes, mineral admixture shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.
- If any concrete has a cementitious material, portland cement, or mineral admixture content that is less than the minimum required, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State \$0.55 for each kilogram of cementitious material, portland cement, or mineral admixture that is less than the minimum required. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions will be made based on the results of California Test 518.
- The requirements of the preceding paragraph shall not apply to minor concrete or commercial quality concrete.

## **90-2 MATERIALS**

### **90-2.01 CEMENT**

- Unless otherwise specified, cement shall be either "Type IP (MS) Modified" cement, "Type II Modified" portland cement or Type V portland cement.
- "Type IP (MS) Modified" cement shall conform to the requirements for Type IP (MS) cement in ASTM Designation: C 595, and shall be comprised of an intimate and uniform blend of Type II cement and not more than 35 percent by mass of mineral admixture. The type and minimum amount of mineral admixture used in the manufacture of "Type IP (MS) Modified" cement shall be in conformance with the provisions in Section 90-4.08, "Required Use of Mineral Admixtures."
- "Type II Modified" portland cement shall conform to the requirements for Type II portland cement in ASTM Designation: C 150.
- In addition, "Type IP (MS) Modified" cement and "Type II Modified" portland cement shall conform to the following requirements:
  - A. The cement shall not contain more than 0.60 percent by mass of alkalis, calculated as the percentage of Na<sub>2</sub>O plus 0.658 times the percentage of K<sub>2</sub>O, when determined by either direct intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in conformance with the requirements in ASTM Designation: C 114;
  - B. The autoclave expansion shall not exceed 0.50 percent; and
  - C. Mortar, containing the cement to be used and Ottawa sand, when tested in conformance with California Test 527, shall not expand in water more than 0.010 percent and shall not contract in air more than 0.048 percent, except that when cement is to be used for precast prestressed concrete piling, precast prestressed concrete members, or steam cured concrete products, the mortar shall not contract in air more than 0.053 percent.
- Type III and Type V portland cements shall conform to the requirements in ASTM Designation: C 150 and the additional requirements listed above for "Type II Modified" portland cement, except that when tested in conformance with California Test 527, mortar containing Type III portland cement shall not contract in air more than 0.075 percent.
- Cement used in the manufacture of cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same cement mill.
- Cement shall be protected from exposure to moisture until used. Sacked cement shall be piled to permit access for tally, inspection, and identification of each shipment.
- Adequate facilities shall be provided to assure that cement meeting the provisions specified in this Section 90-2.01 shall be kept separate from other cement in order to prevent any but the specified cement from entering the work. Safe and suitable facilities for sampling cement shall be provided at the weigh hopper or in the feed line immediately in advance of the hopper, in conformance with California Test 125.
- If cement is used prior to sampling and testing as provided in Section 6-1.07, "Certificates of Compliance," and the cement is delivered directly to the site of the work, the Certificate of Compliance shall be signed by the cement manufacturer or supplier of the cement. If the cement is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product.
- Cement furnished without a Certificate of Compliance shall not be used in the work until the Engineer has had sufficient time to make appropriate tests and has approved the cement for use.

## 90-2.02 AGGREGATES

- Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.
- Natural aggregates shall be thoroughly and uniformly washed before use.
- The Contractor, at the Contractor's expense, shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates, in conformance with California Test 125.
- Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."
- Aggregates shall have not more than 10 percent loss when tested for soundness in conformance with the requirements in California Test 214. The soundness requirement for fine aggregate will be waived, provided that the durability index,  $D_f$ , of the fine aggregate is 60, or greater, when tested for durability in conformance with California Test 229.
- If the results of any one or more of the Cleanness Value, Sand Equivalent, or aggregate grading tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range."
- If the results of either or both the Cleanness Value and coarse aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State \$4.60 per cubic meter for paving concrete and \$7.20 per cubic meter for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.
- If the results of either or both the Sand Equivalent and fine aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete which is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State \$4.60 per cubic meter for paving concrete and \$7.20 per cubic meter for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.
- The 2 preceding paragraphs apply individually to the "Contract Compliance" requirements for coarse aggregate and fine aggregate. When both coarse aggregate and fine aggregate do not conform to the "Contract Compliance" requirements, both paragraphs shall apply. The payments specified in those paragraphs shall be in addition to any payments made in conformance with the provisions in Section 90-1.01, "Description."
- No single Cleanness Value, Sand Equivalent or aggregate grading test shall represent more than 250 m<sup>3</sup> of concrete or one day's pour, whichever is smaller.
- Aggregates specified for freeze-thaw resistance shall pass the freezing and thawing test, California Test 528.
- The Contractor shall notify the Engineer of the proposed source of freeze-thaw resistant concrete aggregates at least 4 months before intended use. Should the Contractor later propose a different source of concrete aggregates, the Contractor shall again notify the Engineer at least 4 months before intended use. Blending of fine or coarse aggregates from untested sources with acceptable aggregates will not be permitted. Provisions for the time of submission of samples as provided in Section 40-1.015, "Cement Content," are superseded by the foregoing.
- Concurrently with notification of proposed sources of freeze-thaw resistant concrete aggregates, the Contractor shall furnish samples in the quantity ordered by the Engineer. The samples shall be secured under the direct supervision of the Engineer. Samples from existing stockpiles of processed aggregate shall be taken from washed materials and shall be visibly damp. Samples from materials in place in a material source shall be taken at depths from the existing surface that will ensure the presence of the full quantity of ground water. Excavations for the purpose of securing samples shall be made to the full depth of intended source operations. Samples shall be protected against loss of contained water until they are delivered to the Engineer.
- The Engineer will waive the above freeze-thaw test and the 4-month advance notice, required in this Section, provided aggregates are to be obtained from sources that have previously passed this test and test results are currently applicable.
- No extension of contract time will be allowed for the time required to perform the freezing and thawing test.
- When the source of an aggregate is changed, except for pavement concrete, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using the aggregates. When the source of an aggregate is changed for pavement concrete, the Engineer shall be allowed sufficient time to adjust the mix, and the aggregates shall not be used until necessary adjustments are made.

### 90-2.02A Coarse Aggregate

- Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, crushed air-cooled iron blast furnace slag or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in reinforced or prestressed concrete.
- Coarse aggregate shall conform to the following quality requirements:

| Tests   | California Test | Requirements |
|---|-----------------|--------------|
| Loss in Los Angeles Rattler (after 500 revolutions) | 211             | 45% max.     |
| Cleanliness Value                                   |                 |              |
| Operating Range                                     | 227             | 75 min.      |
| Contract Compliance                                 | 227             | 71 min.      |

• In lieu of the above Cleanliness Value requirements, a Cleanliness Value "Operating Range" limit of 71, minimum, and a Cleanliness Value "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

1. coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanliness Value of not less than 82 when tested by California Test 227; and
2. prequalification tests performed in conformance with the requirements in California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

### 90-2.02B Fine Aggregate

- Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate or a combination thereof. Manufactured sand shall be well graded.
- Fine aggregate shall conform to the following quality requirements:

| Test                                     | California Test | Requirements              |
|--|-----------------|---------------------------|
| Organic Impurities                       | 213             | Satisfactory <sup>a</sup> |
| Mortar Strengths Relative to Ottawa Sand | 515             | 95%, min.                 |
| Sand Equivalent:                         |                 |                           |
| Operating Range                          | 217             | 75, min.                  |
| Contract Compliance                      | 217             | 71, min.                  |

a Fine aggregate developing a color darker than the reference standard color solution may be accepted if it is determined by the Engineer, from mortar strength tests, that a darker color is acceptable.

• In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71 minimum and a Sand Equivalent "Contract Compliance" limit of 68 minimum will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

1. fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217; and
2. prequalification tests performed in conformance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

### 90-2.03 WATER

• In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1300 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, when tested in conformance with California Test 422,

nor more than 1300 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417. In no case shall the water contain an amount of impurities that will cause either: 1) a change in the setting time of cement of more than 25 percent when tested in conformance with the requirements in ASTM Designation: C 191 or ASTM Designation: C 266 or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in conformance with the requirements in ASTM Designation: C 109, when compared to the results obtained with distilled water or deionized water, tested in conformance with the requirements in ASTM Designation: C 109.

- In non-reinforced concrete work, the water for curing, for washing aggregates and for mixing shall be free from oil and shall not contain more than 2000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, or more than 1500 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417.

- In addition to the above provisions, water for curing concrete shall not contain impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

- Water reclaimed from mixer wash-out operations may be used in mixing concrete. The water shall not contain coloring agents or more than 300 parts per million of alkalis (Na<sub>2</sub>O + 0.658 K<sub>2</sub>O) as determined on the filtrate. The specific gravity of the water shall not exceed 1.03 and shall not vary more than ±0.010 during a day's operations.

#### 90-2.04 ADMIXTURE MATERIALS

- Admixture materials shall conform to the requirements in the following ASTM Designations:

- A. Chemical Admixtures—ASTM Designation: C 494.

- B. Air-entraining Admixtures—ASTM Designation: C 260.

- C. Calcium Chloride—ASTM Designation: D 98.

- D. Mineral Admixtures—Coal fly ash; raw or calcined natural pozzolan as specified in ASTM Designation: C618; silica fume conforming to the requirements in ASTM Designation: C1240, with reduction of mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

- Unless otherwise specified in the special provisions, mineral admixtures shall be used in conformance with the provisions in Section 90-4.08, "Required Use of Mineral Admixtures."

### 90-3 AGGREGATE GRADINGS

#### 90-3.01 GENERAL

- Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes that the Contractor proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. The proposed gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

- The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in the Engineer's opinion, furnishing the gradation is not necessary for the type or amount of concrete work to be constructed.

- Gradations proposed by the Contractor shall be within the following percentage passing limits:

| Primary Aggregate Nominal Size | Sieve Size | Limits of Proposed Gradation |
|--------------------------------|------------|------------------------------|
| 37.5-mm x 19-mm                | 25-mm      | 19 - 41                      |
| 25-mm x 4.75-mm                | 19-mm      | 52 - 85                      |
| 25-mm x 4.75-mm                | 9.5-mm     | 15 - 38                      |
| 12.5-mm x 4.75-mm              | 9.5-mm     | 49 - 78                      |
| 9.5-mm x 2.36-mm               | 9.5-mm     | 50 - 85                      |
| Fine Aggregate                 | 1.18-mm    | 55 - 75                      |
| Fine Aggregate                 | 600-µm     | 34 - 46                      |
| Fine Aggregate                 | 300-µm     | 16 - 29                      |

- Should the Contractor change the source of supply, the Contractor shall submit in writing to the Engineer the new gradations before their intended use.



### 90-3.02 COARSE AGGREGATE GRADING

- The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

| Sieve Sizes | Percentage Passing Primary Aggregate Nominal Sizes |                     |                 |                     |                   |                     |                  |                     |
|-------------|--|---------------------|-----------------|---------------------|-------------------|---------------------|------------------|---------------------|
|             | 37.5-mm x 19-mm                                    |                     | 25-mm x 4.75-mm |                     | 12.5-mm x 4.75-mm |                     | 9.5-mm x 2.36-mm |                     |
|             | Operating Range                                    | Contract Compliance | Operating Range | Contract Compliance | Operating Range   | Contract Compliance | Operating Range  | Contract Compliance |
| 50-mm       | 100  | 100                 | —               | —                   | —                 | —                   | —                | —                   |
| 37.5-mm     | 88-100   | 85-100              | 100             | 100                 | —                 | —                   | —                | —                   |
| 25-mm       | x ± 18   | X ± 25              | 88-100          | 86-100              | —                 | —                   | —                | —                   |
| 19-mm       | 0-17   | 0-20                | X ± 15          | X ± 22              | 100               | 100                 | —                | —                   |
| 12.5-mm     | —  | —                   | —               | —                   | 82-100            | 80-100              | 100              | 100                 |
| 9.5-mm      | 0-7  | 0-9                 | X ± 15          | X ± 22              | X ± 15            | X ± 22              | X ± 15           | X ± 20              |
| 4.75-mm     | —  | —                   | 0-16            | 0-18                | 0-15              | 0-18                | 0-25             | 0-28                |
| 2.36-mm     | —  | —                   | 0-6             | 0-7                 | 0-6               | 0-7                 | 0-6              | 0-7                 |

- In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."
- Coarse aggregate for the 37.5-mm, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and stored separately, provided that the combined material conforms to the grading requirements for that particular primary aggregate nominal size.
- When the 25-mm, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately, provided that the combined material shall conform to the grading requirements for the 25-mm x 4.75-mm primary aggregate nominal size.

### 90-3.03 FINE AGGREGATE GRADING

- Fine aggregate shall be graded within the following limits:

| Sieve Sizes | Percentage Passing |                     |
|-------------|--------------------|---------------------|
|             | Operating Range    | Contract Compliance |
| 9.5-mm      | 100                | 100                 |
| 4.75-mm     | 95-100             | 93-100              |
| 2.36-mm     | 65-95              | 61-99               |
| 1.18-mm     | X ± 10             | X ± 13              |
| 600-μm      | X ± 9              | X ± 12              |
| 300-μm      | X ± 6              | X ± 9               |
| 150-μm      | 2-12               | 1-15                |
| 75-μm       | 0-8                | 0-10                |

- In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."
- In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the 1.18-mm sieve and the total percentage passing the 600-μm sieve shall be between 10 and 40, and the difference between the percentage passing the 600-μm and 300-μm sieves shall be between 10 and 40.
- Fine aggregate may be separated into 2 or more sizes and stored separately, provided that the combined material conforms to the grading requirements specified in this Section 90-3.03.

### 90-3.04 COMBINED AGGREGATE GRADINGS

- Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that shall produce a mixture within the grading limits for combined aggregates as specified herein. Within these limitations, the relative proportions shall be as ordered by the Engineer, except as otherwise provided in Section 90-1.01, "Description."

- The combined aggregate grading used in portland cement concrete pavement shall be the 37.5-mm, maximum grading.
- The combined aggregate grading used in concrete for structures and other concrete items, except when specified otherwise in these specifications or the special provisions, shall be either the 37.5-mm, maximum grading, or the 25-mm, maximum grading, at the option of the Contractor.

Grading Limits of Combined Aggregates

| Sieve Sizes | Percentage Passing |            |              |             |
|-------------|--------------------|------------|--------------|-------------|
|             | 37.5-mm Max.       | 25-mm Max. | 12.5-mm Max. | 9.5-mm Max. |
| 50-mm       | 100                | —          | —            | —           |
| 37.5-mm     | 90-100             | 100        | —            | —           |
| 25-mm       | 50-86              | 90-100     | —            | —           |
| 19-mm       | 45-75              | 55-100     | 100          | —           |
| 12.5-mm     | —                  | —          | 90-100       | 100         |
| 9.5-mm      | 38-55              | 45-75      | 55-86        | 50 - 100    |
| 4.75-mm     | 30-45              | 35-60      | 45-63        | 45 - 63     |
| 2.36-mm     | 23-38              | 27-45      | 35-49        | 35 - 49     |
| 1.18-mm     | 17-33              | 20-35      | 25-37        | 25 - 37     |
| 600-μm      | 10-22              | 12-25      | 15-25        | 15 - 25     |
| 300-μm      | 4-10               | 5-15       | 5-15         | 5 - 15      |
| 150-μm      | 1-6                | 1-8        | 1-8          | 1 - 8       |
| 75-μm       | 0-3                | 0-4        | 0-4          | 0 - 4       |

- Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

## 90-4 ADMIXTURES

### 90-4.01 GENERAL

- Admixtures used in portland cement concrete shall conform to and be used in conformance with the provisions in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.
- Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by mass of admixture, as determined by California Test 415, shall not be used in prestressed or reinforced concrete.
- Calcium chloride shall not be used in concrete containing steel reinforcement or other embedded metals.
- Mineral admixture used in concrete for exposed surfaces of like elements of a structure shall be from the same source and of the same percentage.
- Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.
- If more than one admixture is used, the admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

### 90-4.02 MATERIALS

- Admixture materials shall conform to the provisions in Section 90-2.04, "Admixture Materials."

### 90-4.03 ADMIXTURE APPROVAL

- No admixture brand shall be used in the work unless it is on the Department's current list of approved brands for the type of admixture involved.
- Admixture brands will be considered for addition to the approved list if the manufacturer of the admixture submits to the Transportation Laboratory a sample of the admixture accompanied by certified test results demonstrating that the admixture complies with the requirements in the appropriate ASTM Designation and these specifications. The sample shall be sufficient to permit performance of all required tests. Approval of admixture brands will be dependent upon a determination as to compliance with the requirements, based on the certified test results submitted, together with tests the Department may elect to perform.
- When the Contractor proposes to use an admixture of a brand and type on the current list of approved admixture brands, the Contractor shall furnish a Certificate of Compliance from the manufacturer, as provided in Section 6-1.07, "Certificates of Compliance," certifying that the admixture furnished is the same as that previously approved. If a previously

approved admixture is not accompanied by a Certificate of Compliance, the admixture shall not be used in the work until the Engineer has had sufficient time to make the appropriate tests and has approved the admixture for use. The Engineer may take samples for testing at any time, whether or not the admixture has been accompanied by a Certificate of Compliance.

- If a mineral admixture is delivered directly to the site of the work, the Certificate of Compliance shall be signed by the manufacturer or supplier of the mineral admixture. If the mineral admixture is used in ready-mix concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product.

#### **90-4.04 REQUIRED USE OF CHEMICAL ADMIXTURES AND CALCIUM CHLORIDE**

- When the use of a chemical admixture or calcium chloride is specified or ordered by the Engineer, the admixture shall be used at the dosage specified or ordered, except that if no dosage is specified or ordered, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

- Calcium chloride shall be dispensed in liquid, flake, or pellet form. Calcium chloride dispensed in liquid form shall conform to the provisions for dispensing liquid admixtures in Section 90-4.10, "Proportioning and Dispensing Liquid Admixtures."

#### **90-4.05 OPTIONAL USE OF CHEMICAL ADMIXTURES**

- The Contractor will be permitted to use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

- A. When a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by mass, except that the resultant cementitious material content shall be not less than 300 kilograms per cubic meter; and
- B. When a reduction in cementitious material content is made, the dosage of admixture used shall be the dosage used in determining approval of the admixture.

- Unless otherwise specified, a Type C accelerating chemical admixture conforming to the requirements in ASTM Designation: C 494, may be used in portland cement concrete. Inclusion in the mix design submitted for approval will not be required provided that the admixture is added to counteract changing conditions that contribute to delayed setting of the portland cement concrete, and the use or change in dosage of the admixture is approved in writing by the Engineer.

#### **90-4.06 REQUIRED USE OF AIR-ENTRAINING ADMIXTURES**

- When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

#### **90-4.07 OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES**

- When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent, and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate as provided in Section 40-1.015, "Cement Content."

#### **90-4.08 REQUIRED USE OF MINERAL ADMIXTURES**

- Unless otherwise specified, mineral admixture shall be combined with cement to make cementitious material.
- The calcium oxide content of mineral admixtures shall not exceed 10 percent and the available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 618.
- The amounts of cement and mineral admixture used in cementitious material shall be sufficient to satisfy the minimum cementitious material content requirements specified in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and shall conform to the following:

- A. The minimum amount of cement shall not be less than 75 percent by mass of the specified minimum cementitious material content;

- B. The minimum amount of mineral admixture to be combined with cement shall be determined using one of the following criteria:
1. When the calcium oxide content of a mineral admixture is equal to or less than 2 percent by mass, the amount of mineral admixture shall not be less than 15 percent by mass of the total amount of cementitious material to be used in the mix;
  2. When the calcium oxide content of a mineral admixture is greater than 2 percent, the amount of mineral admixture shall not be less than 25 percent by mass of the total amount of cementitious material to be used in the mix;
  3. When a mineral admixture that conforms to the provisions for silica fume in Section 90-2.04, "Admixture Materials," is used, the amount of mineral admixture shall not be less than 10 percent by mass of the total amount of cementitious material to be used in the mix
- C. The total amount of mineral admixture shall not exceed 35 percent by mass of the total amount of cementitious material to be used in the mix. Where Section 90-1.01, "Description," specifies a maximum cementitious content in kilograms per cubic meter, the total mass of cement and mineral admixture per cubic meter shall not exceed the specified maximum cementitious material content.

#### **90-4.09 BLANK**

#### **90-4.10 PROPORTIONING AND DISPENSING LIQUID ADMIXTURES**

- Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within  $\pm 5$  percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.
- Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.
- If more than one liquid admixture is used in the concrete mix, each liquid admixture shall have a separate measuring unit and shall be dispensed by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix.
- When automatic proportioning devices are required for concrete pavement, dispensers for liquid admixtures shall operate automatically with the batching control equipment. The dispensers shall be equipped with an automatic warning system in good operating condition that will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent, or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.
- Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.
- Liquid admixtures requiring dosages greater than  $2.5 \text{ L/m}^3$  shall be considered to be water when determining the total amount of free water as specified in Section 90-6.06, "Amount of Water and Penetration."
- Special admixtures, such as "high range" water reducers that may contribute to a high rate of slump loss, shall be measured and dispensed as recommended by the admixture manufacturer and as approved by the Engineer.

#### **90-4.11 STORAGE, PROPORTIONING, AND DISPENSING OF MINERAL ADMIXTURES**

- Mineral admixtures shall be protected from exposure to moisture until used. Sacked material shall be piled to permit access for tally, inspection and identification for each shipment.
- Adequate facilities shall be provided to assure that mineral admixtures meeting the specified requirements are kept separate from other mineral admixtures in order to prevent any but the specified mineral admixtures from entering the work. Safe and suitable facilities for sampling mineral admixtures shall be provided at the weigh hopper or in the feed line immediately in advance of the hopper.

- Mineral admixtures shall be incorporated into concrete using equipment conforming to the requirements for cement weigh hoppers, and charging and discharging mechanisms in ASTM Designation: C 94, in Section 90-5.03, "Proportioning," and in this Section 90-4.11.

- When concrete is completely mixed in stationary paving mixers, the mineral admixture shall be weighed in a separate weigh hopper conforming to the provisions for cement weigh hoppers and charging and discharging mechanisms in Section 90-5.03A, "Proportioning for Pavement," and the mineral admixture and cement shall be introduced simultaneously into the mixer proportionately with the aggregate. If the mineral admixture is not weighed in a separate weigh hopper, the Contractor shall provide certification that the stationary mixer is capable of mixing the cement, admixture, aggregates and water uniformly prior to discharge. Certification shall contain the following:

- A. Test results for 2 compressive strength test cylinders of concrete taken within the first one-third and 2 compressive strength test cylinders of concrete taken within the last one-third of the concrete discharged from a single batch from the stationary paving mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;"
- B. Calculations demonstrating that the difference in the averages of 2 compressive strengths taken in the first one-third is no greater than 7.5 percent different than the averages of 2 compressive strengths taken in the last one-third of the concrete discharged from a single batch from the stationary paving mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;" and
- C. The mixer rotation speed and time of mixing prior to discharge that are required to produce a mix that meets the requirements above.

## **90-5 PROPORTIONING**

### **90-5.01 STORAGE OF AGGREGATES**

- Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size shall be avoided and also that the various sizes shall not become intermixed before proportioning.

- Aggregates shall be stored or stockpiled and handled in a manner that shall prevent contamination by foreign materials. In addition, storage of aggregates at batching or mixing facilities that are erected subsequent to the award of the contract and that furnish concrete to the project shall conform to the following:

- A. Intermingling of the different sizes of aggregates shall be positively prevented. The Contractor shall take the necessary measures to prevent intermingling. The preventive measures may include, but are not necessarily limited to, physical separation of stockpiles or construction of bulkheads of adequate length and height; and
- B. Contamination of aggregates by contact with the ground shall be positively prevented. The Contractor shall take the necessary measures to prevent contamination. The preventive measures shall include, but are not necessarily limited to, placing aggregates on wooden platforms or on hardened surfaces consisting of portland cement concrete, asphalt concrete, or cement treated material.

- In placing aggregates in storage or in moving the aggregates from storage to the weigh hopper of the batching plant, any method that may cause segregation, degradation, or the combining of materials of different gradings that will result in any size of aggregate at the weigh hopper failing to meet the grading requirements, shall be discontinued. Any method of handling aggregates that results in excessive breakage of particles shall be discontinued. The use of suitable devices to reduce impact of falling aggregates may be required by the Engineer.

### **90-5.02 PROPORTIONING DEVICES**

- Weighing, measuring, or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, automatic weighing systems shall comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Proportioning for Pavement." Automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and mineral admixture for one batch of concrete is a single operation of a switch or starter.

- Proportioning devices shall be tested at the expense of the Contractor as frequently as the Engineer may deem necessary to ensure their accuracy.

- Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the mass of each batch of material shall not vary from the mass designated by the Engineer by more than the tolerances specified herein.

- Equipment for cumulative weighing of aggregate shall have a zero tolerance of  $\pm 0.5$  percent of the designated total batch mass of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be  $\pm 0.5$  percent of the individual batch mass designated for each size of aggregate. Equipment for cumulative weighing of cement and mineral admixtures shall have a zero tolerance of  $\pm 0.5$  percent of the designated total batch mass of the cement and mineral admixture. Equipment for weighing cement or mineral admixture separately shall have a zero tolerance of  $\pm 0.5$  percent of their designated individual batch masses. Equipment for measuring water shall have a zero tolerance of  $\pm 0.5$  percent of its designated mass or volume.

- The mass indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

- A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch mass of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch masses; and
- B. Cement shall be within 1.0 percent of its designated batch mass. When weighed individually, mineral admixture shall be within 1.0 percent of its designated batch mass. When mineral admixture and cement are permitted to be weighed cumulatively, cement shall be weighed first to within 1.0 percent of its designated batch mass, and the total for cement and mineral admixture shall be within 1.0 percent of the sum of their designated batch masses; and
- C. Water shall be within 1.5 percent of its designated mass or volume.

- Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, mineral admixture, or cement plus mineral admixture and aggregates shall not exceed that of commercially available scales having single graduations indicating a mass not exceeding the maximum permissible mass variation above, except that no scale shall be required having a capacity of less than 500 kg, with 0.5-kg graduations.

### 90-5.03 PROPORTIONING

- Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cement, mineral admixture, and water as provided in these specifications. Aggregates shall be proportioned by mass.

- At the time of batching, aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry mass.

- Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

- Bulk "Type IP (MS) Modified" cement shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer.

- Bulk cement and mineral admixture may be weighed in separate, individual weigh hoppers or may be weighed in the same weigh hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer. If the cement and mineral admixture are weighed cumulatively, the cement shall be weighed first.

- When cement and mineral admixtures are weighed in separate weigh hoppers, the weigh systems for the proportioning of the aggregate, the cement, and the mineral admixture shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and an indicator to constitute an individual and independent material weighing device. The cement and the mineral admixture shall be discharged into the mixer simultaneously with the aggregate.

- The scales and weigh hoppers for bulk weighing cement, mineral admixture, or cement plus mineral admixture shall be separate and distinct from the aggregate weighing equipment.

- For batches with a volume of one cubic meter or more, the batching equipment shall conform to one of the following combinations:

- A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
- B. Single box and scale indicator for all aggregates.
- C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

- In order to check the accuracy of batch masses, the gross mass and tare mass of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined when ordered by the Engineer. The equipment shall be weighed at the Contractor's expense on scales designated by the Engineer.

### 90-5.03A Proportioning for Pavement

- Aggregates and bulk cement, mineral admixture, and cement plus mineral admixture for use in pavement shall be proportioned by mass by means of automatic proportioning devices of approved type conforming to these specifications.
- The Contractor shall install and maintain in operating condition an electronically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by mass of the fine aggregate.
- The batching of cement, mineral admixture, or cement plus mineral admixture and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and mineral admixture hoppers or the cement plus mineral admixture hopper are charged with masses that are within the tolerances specified in Section 90-5.02, "Proportioning Devices."
- When interlocks are required for cement and mineral admixture charging mechanisms and cement and mineral admixtures are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of mineral admixture until the mass of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."
- The discharge gate on the cement and mineral admixture hoppers or the cement plus mineral admixture hopper shall be designed to permit regulating the flow of cement, mineral admixture, or cement plus mineral admixture into the aggregate as directed by the Engineer.
- When separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.
- Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and so that the weigh box cannot be tripped until the required quantity from each of the several bins has been deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.
- When the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required mass is discharged into the weigh box, after which the gate shall automatically close and lock.
- The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

## 90-6 MIXING AND TRANSPORTING

### 90-6.01 GENERAL

- Concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 0.25 m<sup>3</sup> may be mixed by hand methods in conformance with the provisions in Section 90-6.05, "Hand-Mixing."
- Equipment having components made of aluminum or magnesium alloys that would have contact with plastic concrete during mixing, transporting, or pumping of portland cement concrete shall not be used.
- Concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cement, mineral admixture, or cement plus mineral admixture.
- Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533, or slump as determined by ASTM Designation: C 143, and by variations in the proportion of coarse aggregate as determined by California Test 529.
- When the mix design specifies a penetration value, the difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 10 mm. When the mix design specifies a slump value, the difference in slump, determined by comparing slump tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed the values given in the table below. Variation in the proportion of coarse aggregate will be determined by comparing the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 100 kg per cubic meter of concrete.

| Average Slump                 | Maximum Permissible Difference |
|-------------------------------|--------------------------------|
| Less than 100-mm              | 25-mm                          |
| 100-mm to 150-mm              | 38-mm                          |
| Greater than 150-mm to 225-mm | 50-mm                          |

- The Contractor, at the Contractor's expense, shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

#### **90-6.02 MACHINE MIXING**

- Concrete mixers may be of the revolving drum or the revolving blade type, and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators that have an accumulation of hard concrete or mortar shall not be used.
- The temperature of mixed concrete, immediately before placing, shall be not less than 10°C or more than 32°C. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 65°C. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.
- The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one - fourth of the specified mixing time.
- Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, in accumulation of cementitious materials on surfaces of conveyors or hoppers, or in other conditions that reduce or vary the required quantity of cementitious material in the concrete mixture.
- Paving and stationary mixers shall be operated with an automatic timing device. The timing device and discharge mechanism shall be interlocked so that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.
- The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.
- The size of batch shall not exceed the manufacturer's guaranteed capacity.
- When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at jobsite batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.
- Concrete shall be mixed and delivered to the jobsite by means of one of the following combinations of operations:
  - A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in non-agitating hauling equipment (central-mixed concrete).
  - B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer (shrink-mixed concrete).
  - C. Mixed completely in a truck mixer (transit-mixed concrete).
  - D. Mixed completely in a paving mixer.
- Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.
- Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.
- When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed shall be allowed for partial mixing in a central plant.

#### **90-6.03 TRANSPORTING MIXED CONCRETE**

- Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in non-agitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the provisions in Section 90-6.01, "General."
- Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity and shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.
- Bodies of non-agitating hauling equipment shall be constructed so that leakage of the concrete mix, or any part thereof, will not occur at any time.
- Concrete hauled in open-top vehicles shall be protected during hauling against rain or against exposure to the sun for more than 20 minutes when the ambient temperature exceeds 24°C.



- No additional mixing water shall be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer. If the Engineer authorizes additional water to be incorporated into the concrete, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharge is commenced.

- The rate of discharge of mixed concrete from truck mixer-agitators shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

- When a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours or before 250 revolutions of the drum or blades, whichever occurs first, after the introduction of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 30°C or above, the time allowed may be less than 1.5 hours.

- When non-agitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 30°C or above, the time between the introduction of cement to the aggregates and discharge shall not exceed 45 minutes.

- Each load of concrete delivered at the jobsite shall be accompanied by a weighmaster certificate showing the mix identification number, non-repeating load number, date and time at which the materials were batched, the total amount of water added to the load, and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged with cement. This weighmaster certificate shall also show the actual scale masses (kilograms) for the ingredients batched. Theoretical or target batch masses shall not be used as a substitute for actual scale masses.

- Weighmaster certificates shall be provided in printed form, or if approved by the Engineer, the data may be submitted in electronic media. Electronic media shall be presented in a tab-delimited format on a 90 mm diskette with a capacity of at least 1.4 megabytes. Captured data, for the ingredients represented by each batch shall be "line feed, carriage return" (LFCR) and "one line, separate record" with allowances for sufficient fields to satisfy the amount of data required by these specifications.

- The Contractor may furnish a weighmaster certificate accompanied by a separate certificate that lists the actual batch masses or measurements for a load of concrete provided that both certificates are imprinted with the same non-repeating load number that is unique to the contract and delivered to the jobsite with the load.

- Weighmaster certificates furnished by the Contractor shall conform to the provisions in Section 9-1.01, "Measurement of Quantities."

#### **90-6.04 TIME OR AMOUNT OF MIXING**

- Mixing of concrete in paving or stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture, if added with the water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall not be counted as part of the required mixing time.

- The required mixing time, in paving or stationary mixers, of concrete used for concrete structures, except minor structures, shall be not less than 90 seconds or more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

- The required mixing time, in paving or stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds or more than 5 minutes.

- The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete conforming to the provisions for uniformity in Section 90-6.01, "General."

#### **90-6.05 HAND-MIXING**

- Hand-mixed concrete shall be made in batches of not more than 0.25 m<sup>3</sup> and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than 0.3 meters in total depth. On this mixture shall be spread the dry cement and mineral admixture and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

#### **90-6.06 AMOUNT OF WATER AND PENETRATION**

- The amount of water used in concrete mixes shall be regulated so that the penetration of the concrete as determined by California Test 533 or the slump of the concrete as determined by ASTM Designation: C 143 is within the "Nominal" values shown in the following table. When the penetration or slump of the concrete is found to exceed the nominal values listed, the mixture of subsequent batches shall be adjusted to reduce the penetration or slump to a value within the nominal range shown. Batches of concrete with a penetration or slump exceeding the maximum values listed shall not be used in the

work. When Type F or Type G chemical admixtures are added to the mix, the penetration requirements shall not apply and the slump shall not exceed 225 mm after the chemical admixtures are added.

| Type of Work                       | Nominal          |            | Maximum          |            |
|------------------------------------|------------------|------------|------------------|------------|
|                                    | Penetration (mm) | Slump (mm) | Penetration (mm) | Slump (mm) |
| Concrete Pavement                  | 0-25             | —          | 40               | —          |
| Non-reinforced concrete facilities | 0-35             | —          | 50               | —          |
| Reinforced concrete structures     |                  |            |                  |            |
| Sections over 300-mm thick         | 0-35             | —          | 65               | —          |
| Sections 300-mm thick or less      | 0-50             | —          | 75               | —          |
| Concrete placed under water        | —                | 150-200    | —                | 225        |
| Cast-in-place concrete piles       | 65-90            | 130-180    | 100              | 200        |

- The amount of free water used in concrete shall not exceed  $183 \text{ kg/m}^3$ , plus 20 kg for each required 100 kg of cementitious material in excess of  $325 \text{ kg/m}^3$ . The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

- Where there are adverse or difficult conditions that affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic meter of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 kg of water per added 100 kg of cementitious material per cubic meter. The cost of additional cementitious material and water added under these conditions shall be at the Contractor's expense and no additional compensation will be allowed therefor.

- The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for a batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

## 90-7 CURING CONCRETE

### 90-7.01 METHODS OF CURING

- Newly placed concrete shall be cured by the methods specified in this Section 90-7.01 and the special provisions.

#### 90-7.01A Water Method

- The concrete shall be kept continuously wet by the application of water for a minimum curing period of 7 days after the concrete has been placed.

- When a curing medium consisting of cotton mats, rugs, carpets, or earth or sand blankets is to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing mediums.

- When concrete bridge decks and flat slabs are to be cured without the use of a curing medium, the entire surface of the bridge deck or slab shall be kept damp by the application of water with an atomizing nozzle as specified in the preceding paragraph, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

#### 90-7.01B Curing Compound Method

- Surfaces of the concrete that are exposed to the air shall be sprayed uniformly with a curing compound.
- Curing compounds to be used shall be as follows:

- Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
- Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B.

3. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class A.
4. Non-pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class B.
5. Non-pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class A.
6. Non-pigmented curing compound with fugitive dye conforming to the requirements in ASTM Designation: C 309, Type 1-D, Class A.

- The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

- The loss of water for each type of curing compound, when tested in conformance with the requirements in California Test 534, shall not be more than 0.15-kg/m<sup>2</sup> in 24 hours or more than 0.45-kg/m<sup>2</sup> in 72 hours.

- The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

- When the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

- Curing compound shall be applied at a nominal rate of 3.7 m<sup>2</sup>/L, unless otherwise specified.

- At any point, the application rate shall be within  $\pm 1.2$  m<sup>2</sup>/L of the nominal rate specified, and the average application rate shall be within  $\pm 0.5$  m<sup>2</sup>/L of the nominal rate specified when tested in conformance with the requirements in California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

- Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas that are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

- The curing compound shall be applied to the concrete following the surface finishing operation, immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

- At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

- Agitation shall not introduce air or other foreign substance into the curing compound.

- The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, de-emulsification, or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sideways manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

- Curing compounds shall remain sprayable at temperatures above 4°C and shall not be diluted or altered after manufacture.

- The curing compound shall be packaged in clean 210-L barrels or round 19-L containers or shall be supplied from a suitable storage tank located at the jobsite. The containers shall comply with "Title 49, Code of Federal Regulations, Hazardous Materials Regulations." The 210-L barrels shall have removable lids and airtight fasteners. The 19-L containers shall be round and have standard full open head and bail. Lids with bungholes shall not be permitted. On-site storage tanks shall be kept clean and free of contaminants. Each tank shall have a permanent system designed to completely redisperse settled material without introducing air or other foreign substances.

- Steel containers and lids shall be lined with a coating that will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

- Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, volume, date of manufacture, and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in conformance with the Construction Safety Orders and General Industry Safety Orders of the State of California.

- Containers of curing compound shall be labeled to indicate that the contents fully comply with the rules and regulations concerning air pollution control in the State of California.
- When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.
- Curing compound will be sampled by the Engineer at the source of supply or at the jobsite or at both locations.
- Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.
- Tests will be conducted in conformance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

#### **90-7.01C Waterproof Membrane Method**

- The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.
- Sheeting material for curing concrete shall conform to the requirements in AASHTO Designation: M 171 for white reflective materials.
- The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. Joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 100 mm.
- The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer.
- Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.
- Sections of membrane that have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

#### **90-7.01D Forms-In-Place Method**

- Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 0.5-m in least dimension the forms shall remain in place for a minimum period of 5 days.
- Joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

### **90-7.02 CURING PAVEMENT**

- The entire exposed area of the pavement, including edges, shall be cured by the waterproof membrane method, or curing compound method using curing compound (1) or (2) as the Contractor may elect. Should the side forms be removed before the expiration of 72 hours following the start of curing, the exposed pavement edges shall also be cured. If the pavement is cured by means of the curing compound method, the sawcut and all portions of the curing compound that have been disturbed by sawing operations shall be restored by spraying with additional curing compound.
- Curing shall commence as soon as the finishing process provided in Section 40-1.10, "Final Finishing," has been completed. The method selected shall conform to the provisions in Section 90-7.01, "Methods of Curing."
- When the curing compound method is used, the compound shall be applied to the entire pavement surface by mechanical sprayers. Spraying equipment shall be of the fully atomizing type equipped with a tank agitator that provides for continual agitation of the curing compound during the time of application. The spray shall be adequately protected against wind, and the nozzles shall be so oriented or moved mechanically transversely as to result in the minimum specified rate of coverage being applied uniformly on exposed faces. Hand spraying of small and irregular areas, and areas inaccessible to mechanical spraying equipment, in the opinion of the Engineer, will be permitted. When the ambient air temperature is above 15°C, the Contractor shall fog the surface of the concrete with a fine spray of water as specified in Section 90-7.01A, "Water Method." The surface of the pavement shall be kept moist between the hours of 10:00 a.m. and 4:30 p.m. on the day the concrete is placed. However, the fogging done after the curing compound has been applied shall not begin until the compound has set sufficiently to prevent displacement. Fogging shall be discontinued if ordered in writing by the Engineer.

### **90-7.03 CURING STRUCTURES**

- Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in Section 90-7.01, "Methods of Curing."
- The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only Ordinary Surface Finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).
- The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1). The curing compound shall be applied progressively during the deck finishing operations immediately after finishing operations are completed on each individual portion of the deck. The water cure shall be applied not later than 4 hours after completion of deck finishing or, for portions of the decks on which finishing is completed after normal working hours, the water cure shall be applied not later than the following morning.
- Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.
- When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

### **90-7.04 CURING PRECAST CONCRETE MEMBERS**

- Precast concrete members shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing." Curing shall be provided for the minimum time specified for each method or until the concrete reaches its design strength, whichever is less. Steam curing may also be used for precast members and shall conform to the following provisions:
  - A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 10°C, steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 10°C and 32°C.
  - B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.
  - C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner as to prevent the loss of steam and moisture.
  - D. Steam at the jets shall be at low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure shall not exceed 22°C per hour. The curing temperature throughout the enclosure shall not exceed 65°C and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.
  - E. Temperature recording devices that will provide an accurate, continuous, permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 60 m of continuous bed length will be required for checking temperature.
  - F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm, or the temperature under the enclosure shall be maintained above 15°C until the stress is transferred to the concrete.
  - G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

### **90-7.05 CURING PRECAST PRESTRESSED CONCRETE PILES**

- Newly placed concrete for precast prestressed concrete piles shall be cured in conformance with the provisions in Section 90-7.04, "Curing Precast Concrete Members," except that piles with a class designation ending in C (corrosion resistant) shall be cured as follows:
  - A. Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in conformance with the provisions in Section 90-7.01A, "Water Method."

- B. If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 3 days, including the holding and steam curing periods.

#### **90-7.06 CURING SLOPE PROTECTION**

- Concrete slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."
- Concreted-rock slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing," or with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

#### **90-7.07 CURING MISCELLANEOUS CONCRETE WORK**

- Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in Section 90-7.01B, "Curing Compound Method."
- Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."
- Shotcrete shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."
- Mortar and grout shall be cured by keeping the surface damp for 3 days.
- After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

### **90-8 PROTECTING CONCRETE**

#### **90-8.01 GENERAL**

- In addition to the provisions in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8.
- Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.
- Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.
- Concrete that has been frozen or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at the Contractor's expense.

#### **90-8.02 PROTECTING CONCRETE STRUCTURES**

- Structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 7°C for 72 hours after placing and at not less than 4°C for an additional 4 days. When required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.

#### **90-8.03 PROTECTING CONCRETE PAVEMENT**

- Pavement concrete shall be maintained at a temperature of not less than 4°C for 72 hours. When required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.
- Except as provided in Section 7-1.08, "Public Convenience," the Contractor shall protect concrete pavement against construction and other activities that abrade, scar, discolor, reduce texture depth, lower coefficient of friction, or otherwise damage the surface. Stockpiling, drifting, or excessive spillage of soil, gravel, petroleum products, and concrete or asphalt mixes on the surface of concrete pavement is prohibited unless otherwise specified in these specifications, the special provisions or permitted by the Engineer.
- When ordered by the Engineer or shown on the plans or specified in the special provisions, pavement crossings shall be constructed for the convenience of public traffic. The material and work necessary for the construction of the crossings, and their subsequent removal and disposal, will be paid for at the contract unit prices for the items of work involved and if there are no contract items for the work involved, payment for pavement crossings will be made by extra work as provided in Section 4-1.03D, "Extra Work.". Where public traffic will be required to cross over the new pavement, Type III portland cement may be used in concrete, if permitted in writing by the Engineer. The pavement may be opened to traffic as soon as

the concrete has developed a modulus of rupture of 3.8 MPa. The modulus of rupture will be determined by California Test 523.

- No traffic or Contractor's equipment, except as hereinafter provided, will be permitted on the pavement before a period of 10 days has elapsed after the concrete has been placed, nor before the concrete has developed a modulus of rupture of at least 3.8 MPa. Concrete that fails to attain a modulus of rupture of 3.8 MPa within 10 days shall not be opened to traffic until directed by the Engineer.

- Equipment for sawing weakened plane joints will be permitted on the pavement as specified in Section 40-1.08B, "Weakened Plane Joints."

- When requested in writing by the Contractor, the tracks on one side of paving equipment will be permitted on the pavement after a modulus of rupture of 2.4 MPa has been attained, provided that:

- A. Unit pressure exerted on the pavement by the paver shall not exceed 135 kPa;
- B. Tracks with cleats, grousers, or similar protuberances shall be modified or shall travel on planks or equivalent protective material, so that the pavement is not damaged; and
- C. No part of the track shall be closer than 0.3-m from the edge of pavement.

- In case of visible cracking of, or other damage to the pavement, operation of the paving equipment on the pavement shall be immediately discontinued.

- Damage to the pavement resulting from early use of pavement by the Contractor's equipment as provided above shall be repaired by the Contractor at the Contractor's expense.

- The State will furnish the molds and machines for testing the concrete for modulus of rupture, and the Contractor, at the Contractor's expense, shall furnish the material and whatever labor the Engineer may require.

## **90-9 COMPRESSIVE STRENGTH**

### **90-9.01 GENERAL**

- Concrete compressive strength requirements consist of a minimum strength that shall be attained before various loads or stresses are applied to the concrete and, for concrete designated by strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified in these specifications or the special provisions or are shown on the plans.

- The compressive strength of concrete will be determined from test cylinders that have been fabricated from concrete sampled in conformance with the requirements of ASTM Designation: C 172. Test cylinders will be molded and initially field cured in conformance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in conformance with the requirements of ASTM Designation: C 39. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

- When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in conformance with Method 1 of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

- When concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall, at the Contractor's expense, make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State \$14 for each in-place cubic meter of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State \$20 for each in place cubic meter of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. Concrete represented by a single test that indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in conformance with the provisions in Section 6-1.04, "Defective Materials."

- If the test result indicates that the compressive strength at the maximum curing age specified or allowed is below the specified strength, but is 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum curing age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength and quality of the concrete placed in the work are acceptable. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in conformance with the requirements in ASTM Designation: C 42.

- No single compressive strength test shall represent more than 250 m<sup>3</sup>.

- When a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders that have been handled and stored in conformance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. When the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

- When concrete is specified by compressive strength, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

- Certified test data, in order to be acceptable, shall indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of cure days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

- Trial batch test reports, in order to be acceptable, shall indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 4 MPa greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches that were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

- Tests shall be performed in conformance with either the appropriate California Test methods or the comparable ASTM test methods. Equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

- The certified test data and trial batch test reports shall include the following information:

- A. Date of mixing.

- B. Mixing equipment and procedures used.

- C. The size of batch in cubic meters and the mass, type, and source of all ingredients used.

- D. Penetration of the concrete.

- E. The air content of the concrete if an air-entraining admixture is used.

- F. The age at time of testing and strength of all concrete cylinders tested.

- Certified test data and trial batch test reports shall be signed by an official of the firm that performed the tests.

- When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type or class of concrete required at that location.

- After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making changes that, in the judgment of the Engineer, could result in a strength of concrete below that specified.

- The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

- When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.



## **90-10 MINOR CONCRETE**

### **90-10.01 GENERAL**

- Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.
- The Engineer, at the Engineer's discretion, will inspect and test the facilities, materials and methods for producing the concrete to ensure that minor concrete of the quality suitable for use in the work is obtained.

### **90-10.02 MATERIALS**

- Minor concrete shall conform to the following requirements:

#### **90-10.02A Cementitious Material**

- Cementitious material shall conform to the provisions in Section 90-1.01, "Description."

#### **90-10.02B Aggregate**

- Aggregate shall be clean and free from deleterious coatings, clay balls, roots, and other extraneous materials.
- The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, aggregate furnished for minor concrete shall conform to that grading, unless a change is authorized in writing by the Engineer.
- The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 37.5 mm or smaller than 19 mm.
- The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in the Engineer's opinion, the furnishing of the gradation is not necessary for the type or amount of concrete work to be constructed.

#### **90-10.02C Water**

- Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities that would discolor or etch the surface or have an adverse affect on the quality of the concrete.

#### **90-10.02D Admixtures**

- The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

### **90-10.03 PRODUCTION**

- Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice that will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and that conforms to requirements specified herein. Recognized standards of good practice are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or the Department.
- The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."
- The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer.
- Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before stiffening occurs. An elapsed time of 1.5 hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 32°C will be considered conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.
- The required mixing time in stationary mixers shall be not less than 50 seconds or more than 5 minutes.
- The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.
- Each load of ready-mixed concrete shall be accompanied by a weighmaster certificate that shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The weighmaster certificate

shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

- A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets contract requirements, including minimum cementitious material content specified.

#### **90-10.04 CURING MINOR CONCRETE**

- Curing minor concrete shall conform to the provisions in Section 90-7, "Curing Concrete."

#### **90-10.05 PROTECTING MINOR CONCRETE**

- Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 4°C for 72 hours after placing.

#### **90-10.06 MEASUREMENT AND PAYMENT**

- Minor concrete will be measured and paid for in conformance with the provisions specified in the various sections of these specifications covering concrete construction when minor concrete is specified in the specifications, shown on the plans, or indicated by contract item in the Engineer's Estimate.

### **90-11 MEASUREMENT AND PAYMENT**

#### **90-11.01 MEASUREMENT**

- Portland cement concrete will be measured in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.
- When it is provided that concrete will be measured at the mixer, the volume in cubic meters shall be computed as the total mass of the batch in kilograms divided by the density of the concrete in kilograms per cubic meter. The total mass of the batch shall be calculated as the sum of all materials, including water, entering the batch. The density of the concrete will be determined in conformance with the requirements in California Test 518.

#### **90-11.02 PAYMENT**

- Portland cement concrete will be paid for in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.
- Full compensation for furnishing and incorporating admixtures required by these specifications or the special provisions will be considered as included in the contract prices paid for the concrete involved and no additional compensation will be allowed therefor.
- Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."
- Should the Contractor use admixtures in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," or Section 90-4.07, "Optional Use of Air-entraining Admixtures," or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them into the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

### **SECTION 12. (BLANK)**

### **SECTION 13. (BLANK)**

## SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

**GENERAL.**—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer", "SHA resident engineer", or "authorized representative of the SHA", such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

**PERFORMANCE OF PREVIOUS CONTRACT.**—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of \$10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

**NON-COLLUSION PROVISION.**—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

**PARTICIPATION BY MINORITY BUSINESS ENTERPRISES IN SUBCONTRACTING.**—Part 23, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

### Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are minority owned.)

1. Name of joint venture \_\_\_\_\_
2. Address of joint venture \_\_\_\_\_
3. Phone number of joint venture \_\_\_\_\_
4. Identify the firms which comprise the joint venture. (The MBE partner must complete Schedule A.) \_\_\_\_\_  
\_\_\_\_\_
  - a. Describe the role of the MBE firm in the joint venture. \_\_\_\_\_
  - b. Describe very briefly the experience and business qualifications of each non-MBE joint venturer: \_\_\_\_\_  
\_\_\_\_\_
5. Nature of the joint venture's business \_\_\_\_\_
6. Provide a copy of the joint venture agreement.
7. What is the claimed percentage of MBE ownership? \_\_\_\_\_
8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.).
  - a. Profit and loss sharing.
  - b. Capital contributions, including equipment.
  - c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision making, including, but not limited to, those with prime responsibility for:

a. Financial decisions \_\_\_\_\_

b. Management decisions, such as:

(1) Estimating \_\_\_\_\_

(2). Marketing and sales \_\_\_\_\_

(3). Hiring and firing of management personnel \_\_\_\_\_

(4) Purchasing of major items or supplies \_\_\_\_\_

c. Supervision of field operations \_\_\_\_\_

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

#### Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefor and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

|                       |                       |
|-----------------------|-----------------------|
| _____<br>Name of Firm | _____<br>Name of Firm |
| _____<br>Signature    | _____<br>Signature    |
| _____<br>Name         | _____<br>Name         |
| _____<br>Title        | _____<br>Title        |
| _____<br>Date         | _____<br>Date         |

Date \_\_\_\_\_

State of \_\_\_\_\_

County of \_\_\_\_\_

On this \_\_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_

Commission expires \_\_\_\_\_

[Seal]

Date \_\_\_\_\_

State of \_\_\_\_\_

County of \_\_\_\_\_

On this \_\_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_

Commission expires \_\_\_\_\_

[Seal]

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;  
Section IV, paragraphs 1, 2, 3, 4, and 7;  
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
  - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
  - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
  - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
  - b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall

include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
  - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
  - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
  - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
  - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
  - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
  - a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
  - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
  - c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
  - a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
  - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
  - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
6. Training and Promotion:
- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
  - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
  - c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
  - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
  - b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
  - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
  - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.



- 8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
  - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
  - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
- 9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
- a. The records kept by the contractor shall document the following:
    - (1) The number of minority and non-minority group members and women employed in each work classification on the project;
    - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
    - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
    - (4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
  - b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

#### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

##### **1. General:**

- a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.
- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

##### **2. Classification:**

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
  - (1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
  - (2) the additional classification is utilized in the area by the construction industry;
  - (3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
  - (4) with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized

representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

### **3. Payment of Fringe Benefits:**

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.
- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

### **4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

- a. Apprentices:
  - (1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
  - (2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
  - (3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different

practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

- (4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

- (1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
- (2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
- (3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
- (4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or

part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**8. Violation:**

**Liability for Unpaid Wages; Liquidated Damages:** In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

**9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

## **V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

**1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

**2. Payrolls and Payroll Records:**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof of the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing

apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
  - (1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
  - (2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
  - (3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
- f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
- g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:
  - a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.
  - b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

- c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.
2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

#### **VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
  - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
  - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

#### **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

## **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

### **Notice To All Personnel Engaged On Federal-Aid Highway Projects**

18 U.S.C. 1020 READS AS FOLLOWS:

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."

## **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.



## **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion — Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
  - a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
  - d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and

frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

#### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion — Lower Tier Covered Transactions**

- 1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- 2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

#### **XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
  - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- 2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

## FEDERAL-AID FEMALE AND MINORITY GOALS

In accordance with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-aid Construction Contracts" the following are the goals for female utilization:

|   |     |
|---|-----|
| Goal for Women (applies nationwide).....(percent) | 6.9 |
|---|-----|

The following are goals for minority utilization:

### CALIFORNIA ECONOMIC AREA

|            |  | <b>Goal<br/>(Percent)</b> |
|------------|--|---------------------------|
| <b>174</b> | <b>Redding, CA:</b>  |                           |
|            | Non-SMSA Counties  | 6.8                       |
|            | CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama.                     |                           |
| <b>175</b> | <b>Eureka, CA</b>  |                           |
|            | Non-SMSA Counties  | 6.6                       |
|            | CA Del Norte; CA Humboldt; CA Trinity.   |                           |
| <b>176</b> | <b>San Francisco-Oakland-San Jose, CA:</b>   |                           |
|            | SMSA Counties:   |                           |
|            | 7120 Salinas-Seaside-Monterey, CA  | 28.9                      |
|            | CA Monterey.   |                           |
|            | 7360 San Francisco-Oakland   | 25.6                      |
|            | CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo.                 |                           |
|            | 7400 San Jose, CA  | 19.6                      |
|            | CA Santa Clara.  |                           |
|            | 7485 Santa Cruz, CA.   | 14.9                      |
|            | CA Santa Cruz.   |                           |
|            | 7500 Santa Rosa, CA  | 9.1                       |
|            | CA Sonoma.   |                           |
|            | 8720 Vallejo-Fairfield- Napa, CA   | 17.1                      |
|            | CA Napa; CA Solano   |                           |
|            | Non-SMSA Counties  | 23.2                      |
|            | CA Lake; CA Mendocino; CA San Benito   |                           |
| <b>177</b> | <b>Sacramento, CA:</b>   |                           |
|            | SMSA Counties:   |                           |
|            | 6920 Sacramento, CA  | 16.1                      |
|            | CA Placer; CA Sacramento; CA Yolo.   |                           |
|            | Non-SMSA Counties  | 14.3                      |
|            | CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba. |                           |
| <b>178</b> | <b>Stockton-Modesto, CA:</b>   |                           |
|            | SMSA Counties:   |                           |
|            | 5170 Modesto, CA   | 12.3                      |
|            | CA Stanislaus.   |                           |
|            | 8120 Stockton, CA  | 24.3                      |
|            | CA San Joaquin.  |                           |
|            | Non-SMSA Counties  | 19.8                      |
|            | CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Tuolumne.               |                           |

|            |  | <b>Goal<br/>(Percent)</b> |
|------------|--|---------------------------|
| <b>179</b> | <b>Fresno-Bakersfield, CA</b>              |                           |
|            | SMSA Counties:                             |                           |
|            | 0680 Bakersfield, CA                       | 19.1                      |
|            | CA Kern.                                   |                           |
|            | 2840 Fresno, CA                            | 26.1                      |
|            | CA Fresno.                                 |                           |
|            | Non-SMSA Counties                          | 23.6                      |
|            | CA Kings; CA Madera; CA Tulare.            |                           |
| <b>180</b> | <b>Los Angeles, CA:</b>                    |                           |
|            | SMSA Counties:                             |                           |
|            | 0360 Anaheim-Santa Ana-Garden Grove, CA    | 11.9                      |
|            | CA Orange.                                 |                           |
|            | 4480 Los Angeles-Long Beach, CA            | 28.3                      |
|            | CA Los Angeles.                            |                           |
|            | 6000 Oxnard-Simi Valley-Ventura, CA        | 21.5                      |
|            | CA Ventura.                                |                           |
|            | 6780 Riverside-San Bernardino-Ontario, CA. | 19.0                      |
|            | CA Riverside; CA San Bernardino.           |                           |
|            | 7480 Santa Barbara-Santa Maria-Lompoc, CA  | 19.7                      |
|            | CA Santa Barbara.                          |                           |
|            | Non-SMSA Counties                          | 24.6                      |
|            | CA Inyo; CA Mono; CA San Luis Obispo.      |                           |
| <b>181</b> | <b>San Diego, CA:</b>                      |                           |
|            | SMSA Counties                              |                           |
|            | 7320 San Diego, CA.                        | 16.9                      |
|            | CA San Diego.                              |                           |
|            | Non-SMSA Counties                          | 18.2                      |
|            | CA Imperial.                               |                           |

In addition to the reporting requirements set forth elsewhere in this contract the Contractor and subcontractors holding subcontracts, not including material suppliers, of \$10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form FHWA PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

## **FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS**

As part of the Contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The Contractor shall provide on-the-job training to develop full journeymen in the types of trades or job classification involved.

The goal for the number of trainees or apprentices to be trained under the requirements of this special provision will be 3.

In the event the Contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees or apprentices are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of trainees or apprentices in each occupation shall be in their first year of apprenticeship or training.

The number of trainees or apprentices shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing work, the Contractor shall submit to the Department for approval the number of trainees or apprentices to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee or apprentice employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees or apprentices as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority and women trainees or apprentices (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees or apprentices) to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee or apprentice in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by both the Department and the Federal Highway Administration. The Department and the Federal Highway Administration will approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee or apprentice for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with the State of California, Department of Industrial Relations, Division of Apprenticeship Standards recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he does one or more of the following and the trainees or apprentices are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or apprentice or pays the trainee's or apprentice's wages during the offsite training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee or apprentice as a journeyman, is caused by the Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee or apprentice will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees or apprentices be on board for the entire length of the contract. A Contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees or apprentices specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Only trainees or apprentices registered in a program approved by the State of California's State Administrator of Apprenticeship may be employed on the project and said trainees or apprentices shall be paid the standard wage specified under the regulations of the craft or trade at which they are employed.

The Contractor shall furnish the trainee or apprentice a copy of the program he will follow in providing the training. The Contractor shall provide each trainee or apprentice with a certification showing the type and length of training satisfactorily completed.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.